THE
WEALTH OF INDIA

A Monthly Magazine of Practical Information and Useful Discussions

EDITED BY MR. G. A. VAIDYARAMAN, B.A.

Vol. II.] APRIL, 1913 [No 4.

The Wealth of India.

The object of this Monthly is to publish the views of experts on the various problems bearing on material progress, specially agriculture, commerce, industry, economics, co-operation, banking, insurance, popular, scientific and technical education, to digest the notable articles appearing in the leading magazines and periodicals and generally to serve as a record of practical information, and useful discussions. It is believed such a publication is indispensable to statesmen, publicists, businessmen, students of economics and all others interested in the material and moral advancement of the country.

RATES OF SUBSCRIPTION POST FREE.

	Inland.				Foreign.	
	Rs.	A.	P.		s.	d.
Per annum ...	5	0	0	... ...	12	0
Single copy...	0	8	0	... ...	1	0
Sample copy	0	2	0	... ...	1	0

Notice to Contributors.—The Editor solicits contributions on subjects falling within the scope of the journal. Articles should not ordinarily exceed 2,000 words and should be written on one side of the paper only and on half margin. All articles which may be accepted will be paid for on publication. It will be understood that the publishers may at their discretion republish in any form or issue translations of, articles which have been paid for at the time of publication in the journal.

No money should be paid to any Agent. All remittances and letters should be addressed to the Publishers, Messrs. G. A. Vaidya Raman & Co., 3 and 4, Sunkurama Chetty Street, Georgetown, Madras.

Current Topics

BY ECONOMICUS.

Sir G. F. Wilson, on Protection.

We do not share the fond hopes of Sir G. M. Chitnavis with regard to the advantage of a policy of preferential tariffs believing as we do that were India to enter into such trade agreements with Great Britain and the Colonies, she will be only flying from the frying pan to the fire. No advocate of imperial preference has been able to show that India will be a gainer by making the required concessions Nor is the position of India likely to be improved thereby in the United Kingdom or the Colonies. The recent controversy between Lord Crewe and Mr. Bonar Law on this subject should have opened our eyes to the realities of the situation. We fail to see how Sir Gangadhar calls a scheme of preferential tariffs as 'both practicable, beneficial and expedient.' The fact is quite the other way. The discussion on the subject of tariffs in the Viceregal Council was obviously academic. Every body knew it. Sir G. F. Wilson plainly said as much. The resolution was perhaps intended to be a feeler but the Finance Member was too shrewd to be drawn into a pronouncement of Government's policy. He observed that, in the first place, the issue was not in being and in the second place, any policy which might, at some future date, commend itself to India would obviously have to be governed by the policy which obtained in

England. Without connecting himself or his Government to any particular view, Sir G. F. Wilson placed before the Council the complexities of the whole question. Reading between the lines, however, one discovers in the speech clear indications of the free trade faith tempered by the conviction that the present Indian policy of open door cannot for ever be maintained. It appears that he wants to modify the present system not because of his belief that protection will be beneficial to India but because India ought to fall in with the other parts of the Empire when they find it to their own special interest to go in for preferential tariffs. India thus comes in as possessing rich markets which must be retained in the hands of Great Britain. Sir Guy has marshalled the usual hackneyed arguments against protection which are far from convincing. He speaks of the growing competition of Japan and China as a serious imminent danger which will make India reconsider her fiscal position. In a letter to the *Times of India* Mr. J. A. Wadia of Bombay thus comments on this part of Sir Guy's speech :—"Thus you will see, Sir, that as long as the economic exploitation is carried on by England, well and good; but if Japan or China enters the field, then our Finance Minister might prick up his ears." And further :—"In other words, India must wait there patiently and allow England alone to exploit her markets at present; but when there is the fear of Japan and China, to say nothing of Germany and the United States, having a big bite, then there will be time for India to look round and hand her markets back to England and her Colonies." The Finance Member's position could not have been more tersely and clearly summed up than it has been above. We are far from denying that the difficulties in the way of Indian protectionism are immense but we feel that the issue of imperial preference ought to be clearly stated and we should not delude ourselves into expecting from it the advantages it is incapable of yielding. Neither the view of Sir Gangadhar nor the opinion of the Finance Member ought to go forth as the well considered and widely accepted opinion of the Indian people whose judgment on such questions is entitled to any weight.

Imperial Preference.

The resolution of Sir G. M. Chitanvis has had one unfortunate result. It has produced the impression in England that Indian opinion is favourable to the adoption of a scheme of preferential trade such as tariff reformers in that country have been advocating. Protectionists and Imperialists have clutched eagerly at the speeches made in the Viceregal Council by Sir Gangadhar and Sir G. F. Wilson as a welcome indication of the general Indian attitude on that most vexed question. Nothing can, however, be farther from the truth. Indian public opinion has been clearly reflected in the press which has repudiated the position taken up by Sir Gangadhar Chitnavis and has emphasised the fact that what the people in this country particularly demand is fiscal freedom. People in India cannot be blinded by Imperial enthusiasm into acquiescing in schemes of trade policy which do not offer any substantial advantage to their industries, commerce and revenue. So long as such a scheme is not forthcoming, it is useless to utter sonorous platitudes about the unity and solidarity of the Empire and so forth. Tariff reformers in England are not themselves agreed as to their fiscal policy and are hopelessly divided on that most important question. In a recent issue of the *Contemporary Review*, Mr. Chiozza Money, M.P., had a telling article on tariff reform and its fuility. He reviewed the fiscal situation in the light of the trade figures of the past ten years since the banner of tariff reform was first unfurled by Mr. Joseph Chamberlain in 1903. The figures cited by him conclusively prove that the forebodings of the Missionary of Empire have been utterly falsified by the continued prosperity of British trade and the reader is inclined to accept his conclusion that the Commercial Union of the British Empire is more easily talked about than advantageously carried out into practice. The London *Times* lays down a very sane proposition in this

connection when it says that the position of British administration of subject States should be one of trusteeship and not of exploitation. It holds that Indian opinion should never be overruled in favour of the interests of British commerce alone, but only in the interest of India herself, or of the whole Imperial system to which India belongs. Unexceptionable and sound in itself, this principle is not likely to remain anything better than a pious hope. Are not the iniquitous excise duties on the Indian Mill-made cloth retained in the interests of British manufacturers alone, though Indians have been crying themselves hoarse over that unjust impost? The position of the *Times* is correct in theory and India will not demur to it. But the reciprocal duties and responsibilities are kept delightfully vague and the Indian Government is always called upon to enter into a one sided compact. The treatment accorded by the colonies to India and the Indians is a sample of the recognition abroad of this responsibility and all high talk about the Empire must sound hollow so long as there is no substantial amendment in this deplorable attitude.

Additional Duty on Sugar Imports

With this attitude of the Government of India towards protection stated above, it was not to be expected that the Hon'ble Rai Bahadur Sri Ram's resolution asking for a five per cent. additional duty on foreign sugar would commend itself to the Imperial Legislative Council. This is not the first time that the additional duty on imported sugar has been suggested. When the question of fresh taxation was discussed three years ago, sugar was pointed out as the most suitable article for additional taxation. While our agricultural and manufacturing methods are yet primitive, we cannot seriously maintain that an additi nal duty on imported sugar will immediately rehabilitate the indigenous industry or that our refineries will be able to turn out cheap and fine sugar in competition with the foreign article. But it cannot be doubted, at the same time, that an additional duty of five per cent. will give to the Indian industry great stimulus and under its influence it will soon attain a condition of strength and prosperity. Government have been recently making attempts to make improvements in the cultivation of better varieties of cane, and in the methods of crushing and manufacturing. But it is a very slow process the effects of which are not readily seen while the land is being inundated with cheap, foreign sugar. The arguments put forward by some speakers against the adoption of the resolution such as the injury that would be caused to the lower classes of people and so on, were, of course, extremely weak. The Hon'ble Mr. Gillan maintained that no case had been made out for any special and urgent treatment in the case of sugar and that it would be exceedingly difficult to adopt the resolution unless and until the general principle of protection had been adopted. He said that if the indigenous industry had been protected, there would not have been the same energy and keenness shown in the efforts to improve it. We do not feel inclined to take this remark seriously though we agree with Mr. Gillan that much may be done by adopting a constructive policy, that is, direct development and improvement. We should like to see this policy of active development strongly supported by a reasonable measure of protection which will attract capital and enterprise towards the industry and ensure its future.

Sir Henry Cotton and Excise Duties

The paper which Sir Henry Cotton read sometime ago on, 'Free Trade in its relation to the Indian Empire' was mainly devoted to showing that the schemes of imperial preference and tariff reform adumbrated by Mr. Bonar Law were impracticable and far from advantageous to India and that for a debtor country like India, free trade was essential. We have no desire to follow Sir Henry with the discussion of these questions here. What struck us in his paper especially was his strong case against the cotton excise duties. Free traders usually

defend these duties on the ground that they are necessary to counteract the protective effect of the customs duty levied on imported cotton goods. The import duty of $3\frac{1}{2}$ per cent. is not, however, protective, it is a revenue duty. If that is so, what is the justification for the excise duty? Sir Henry points out that there can be no logical justification for imposing an Indian excise on one particular class of manufactures which is liable to a customs duty and for exempting all other classes of manufacture which are similarly liable. Boots and shoes, harness and saddlery are liable to a 5 per cent. *ad valorem* customs duty and directly compete with the Cawnpore leather factories. Both products are in the same position, but in neither case is there any excise. If it be argued that there is no substantial competition between the imported Lancashire cottons and the courser cottons woven in the Indian mills, the objection of Manchester to the abolition of the excise duty falls to the ground. Sir Henry thinks that Government are reluctant to forego a source of revenue they possess. He believes that as the existence of the excise duty causes much irritation and ill-feeling, its repeal will be a welcome boon to which neither free traders nor protectionists can reasonably object. We commend this argument to the serious attention of Lancashire and the Government of India.

The Royal Commission on India Office Finance.

The composition of the Commission appointed to investigate the financial methods adopted by the India Office has, on the whole, been favourably received in this country, though there is an amount of dissatisfaction that Indian public opinion has not been adequately represented on it. From the very outset, the urgent need of appointing on the Commission men from India who would judge the evidence placed before it from the point of view of the Indian public has been pressed on the attention of Government. Sir Shapurji Broacha is the only Indian on the Commission. He will no doubt bring his intimate knowledge of finance to bear on the inquiry but it is said he is not inclined to find much fault with the existing system which has been assailed in the press and outside. Sir James Begbie is Secretary and Treasurer of the Bank of Bombay and will represent the interests of the Indian Presidency Banks when the proposal of a Central State Bank comes to be considered. Mr. Gillan is the representative of the Government of India being Finance Secretary to that Government. The Joint Stock Banks and the Chartered banks in England have been purposely excluded while advantage has been taken of the financial experience of men like Mr. H. N. Gladstone. The India Office is also strongly represented on the Commission, while to top all, comes the President, the Right Hon'ble Mr. Austen Chamberlain. The latter gentleman is intimately associated with financial and commercial concerns in England and has held important offices when the Unionists were in power. His nomination is calculated to sooth the opposition and convince them that the inquiry is going to be thoroughly impartial. The members of the Commission are, almost all of them, men of practical experience, men connected with British and Indian finance, and representing different important interests. There is therefore every hope that it will thresh out all the matters placed before it and that therefore its recommendations will be extremely valuable. One name that is particularly missed is that of Sir G. F. Wilson whose selection would have greatly strengthened the Commission and would have been most popular in this country. Why he does not find a place on the Commission is more than the public can say, though there are various surmises current in connection with it. One serious flaw in the composition of the Commission, as we have said above, is that it does not include one or two Indians who would have looked at the evidence to be recorded by the Commission from the purely Indian point of view. Indian financial experts could be easily named who would have been valuable acquisitions to the body and their inclusion would have inspired more confidence in the Indian public.

The Scope of the Inquiry.

The scope of the Commission's inquiry is sufficiently wide and includes all the important issues that have been raised in the criticism levelled at the India Office. The Commission is to enquire into the location and management of the general balances of the Government of India. The inflated cash balances that have been allowed to accumulate in the home treasury recently and lent to the London banks at cheap rates of interest formed one of the most important counts of the indictment against the India Office and the decision of the Commission on this question will be awaited with great interest. The excessive sales of Council Bills and transfers by the Secretary of State beyond his normal and reasonable needs have led to serious consequences to the Indian currency. Whether this procedure is called for in the interests of commerce as Mr. Montagu maintained in the House of Commons last year is also an important point the Commission will have to decide. The diversion of the Gold Standard Reserve and a large part of the Paper currency reserve to London is another subject about which the policy of the India Office has been seriously assailed. Similarly the financial organization of the India Office under which Indian interests are shown to have been subordinated to those of London financial needs, ought to come in for a searching investigation. The terms of reference do not include the question of a gold mint or gold currency for India, presumably because the subject is regarded as lying beyond the pale of discussion. The system recommended by the Fowler Committee will be taken as the basis of the inquiry and the existing arrangements will be judged by that standard. The *Wednesday Review* warns the Commission that if they begin their inquiries on the above basis they are bound to fail and suggest that the real question should be, which shall be our standard, gold or silver, and what steps should be taken to give the country an automatic currency. Much as we should like to have an automatic currency for India, we do not think that any useful purpose will be served now by opening the whole problem of bi-metalism or a single silver standard. Witnesses will be invited from the various provinces and the Indian and European communities to give evidence beforethe Commission and it is needful that the Indian point of view should be clearly and emphatically placed before it. We hope that it will be possible for an adquate number of the exponents of Indian opinion to tender their evidence and be cross-examined thereon.

Gold Absorption.

The outcry against the increased gold absorption by India seems to have subsided and has been proved to be selfish and unreasonable. The large gold imports into India are undeniable. The imports for 1912 amounted to the huge sum of £31,980,000 as compared with £33,366,000 in 1911. But there is no ground to suppose that this high level will continue to be maintained. There are already indications of a slackening in the demand for gold which is conditioned by the excess of Indian exports over imports. The latter have recently shown a tendency to rise and instead of receiving the balance of trade in her favour in gold, India has been importing a larger quantity of merchandise. Indian gold demand must fluctuate from time to time and it is unquestionable that this country will exercise a powerful influence upon the distribution of gold throughout the world. Whatever that may be, India's right to her gold imports is unimpeachable and this fact has got to be emphasised and acknowledged. Mr. Ross made very sane remarks on this question which deserve to be borne in mind by all those alarmists who have been saying silly things in connection with the Indian imports of gold. "If India wanted gold," he observed, "either for circulation or even for hoarding, and was prepared to pay for it, we had no moral right to interfere with her right to possess the metal. Any measures which might be recommended for the purpose of interfering in any way with the flow of gold to the East would be worse than

a mistake—it would be an injustice to India". Much will be heard of this in the evidence before the Finance Commission and the unreasonableness and injustice of the outcry against India must be finally exposed.

Indian Gold Coinage

In that portion of the budget statement which deals with currency, Sir G. F. Wilson has briefly summarised the despatch of the Government of India to the Secretary of State on the question of a gold mint. It may be recollected that in that despatch Government had urged the desirability of establishing a branch mint in India open to the coinage of gold. The Secretary of State in reply pointed out the difficulties raised by the Lords of the Treasury and suggested two alternatives. Without making any definite pronouncement on the subject the Finance Member stated that as the sovereign introduced questions of control which as between the Government of India and the Mint authorities were difficult of solution, they might issue a special Indian coin to begin with and the experience they would gain in coining an Indian piece would show whether it would be worth their while to undertake the additional trouble and expense involved in the coining of sovereigns. We shall not traverse the whole ground covered by Sir G.F. Wilson as he only repeats the arguments put forth in the despatch of the Government of India. He, however, emphasises the simple and modest character of their proposal which is only carrying out the policy recommended by the Currency Commissions and dictated by the needs of the present position of currency, exchange and commerce in this country. The time for minting a gold coin in this country has indeed come and the Government of India ought to lose no time in making a beginning. Non-official members in the Imperial Legislative Council have pressed the urgency of the question on the attention of Government but in view of the Royal Commission which has been appointed to investigate the whole question of Indian currency and finance, it appears likely that the starting of the gold mint in India will be postponed till the report of the Commission is out. To a question put by Mr. Touche in the House of Commons some time ago in this behalf, Mr. Baker stated that the consideration of the possible coinage of the sovereign in India was postponed for the time being and that the Secretary of State could not say without further consultation with the Government of India, when a final decision would be reached regarding the coinage of some kind of gold coin in India. Really speaking, in the light of the very weighty despatch of the Government of India and the statement of the Finance Member in the Viceregal council, there is no need to put off the question of the gold coinage. But if Local Governments and public bodies are being or are to be further consulted in the matter, it is as good as shelved for the present. The mercantile communities in the country are, by no means, unanimous on the subject. Bombay and Calcutta take opposite sides, the Punjab seems to be hostile to an Indian gold coin; the other provinces are either opposed or lukewarm. While a suggestion has come from some quarters that the Government should immediately start its gold mint, counsels of patience and calm deliberation have proceeded from other sides. The appointment of the Finance Commission is put forth as an argument in favour of postponement. One cannot say, under the circumstances, what course Government would take. It will certainly be very unfortunate if action is further delayed as the case for an Indian gold mint is so strong that it is unnecessary for Government to wait for the pronouncement of the Commission.

A State Bank for India.

The appointment of the Finance Commission has been availed of to revive the proposal to establish in India a State Bank with functions analogous to those of the Bank of England, and a correspondent in the Financial supplement of the London *Times* has indicated the grounds upon which this development is advocated. Mr. Alfred de Rothschild had submitted to the Fowler Committee a scheme

of a Central Bank for India and the idea was supported by a member of the Commission, Sir Everard Hambro. They expressed the opinion that the detailed working of a managed currency required a technical skill and adaptability which could hardly be looked for in a Government department and that this work could be done better and with great advantage by a Bank which, like the Bank of England, was to be entrusted with the management of the paper currency, The proposal of a Central Bank must take account of the existing three Presidency Banks of Calcutta, Madras and Bombay between which aud the Government there are reciprocal statutory obligations which must be modified or disappear if an All-India institution is created. The Presidency Banks labour under great disadvantages in as much as they are inadequately capitalised and strictly compartmented and are also strictly debarred by law from raising money in the English market. It is contended that the present banking facilities in India are limited and have not kept pace with the increasing trade in the country. The proposed Bank, it is said, willdraw forth a vast amount of the infructuous capital lying idle or going to waste and will utilise it better than the Presidency Banks. The big fluctuations in the discount rates will be minimised and they will be materially lowered on an average. Many years ago, Government used to keep the whole of the Treasury balances at the Presidency towns in the Presidency Banks, but experience showed that this practise was dangerous as Government could not often withdraw funds of its own in times of need without seriously disturbing the money market. Government began therefore to keep its balances at its own treasuries in provincial towns as well as in the district towns. A big State Bank with large capital and plenty of resources, we are told, will meet all the requirements of Government which will be enabled again to keep its head-quarters balances in Bank custody without any apprehension of monetary disturbance in consequence of withdrawals. The last argument by which the idea of the new Bank is supported is its usefulness in helping to maintain the gold standard by contributing to the flow of gold and silver as wanted between England and India. Commenting upon the proposal of the state Bank, the *Times* of *India* draws attention to the fact that its original purpose was to provide means and machinery for the conduct of the new gold standard and gold currency but that when the Government of India considered the suggestion, the main object of the Bank was set aside and emphasis was laid upon the necessity of providing increased credit facilities to the country's trade and the maintenance of a steady and low rate of discount. As will have been seen from the summary of the revived proposal given above, the correspondent of the *Times* follows the Government of India in restricting the scope of the operations of the State Bank to increasing credit facilities and keeping down the discount rate. Banking is making steady progress in India and Government's financial arrangements are largely responsible for the stringency that occurs from time to time. A considerable gold standard reserve fund has also been accumulated to prop up exchange in times of stress. If a State Bank has, therefore, to be started under present conditions, it will have to be entrusted with the control of the financial operations which are manipulated by the India Office. A State Bank will have been started in vain if it were not to be allowed to manage the Paper Currency, the Gold Standard Reserve, the Treasury balances in England and in India and the remittances of home charges by the Government of India. The idea of a Central Bank on the model of the Bank of England or the Bank of France is indeed a very attractive one. If the three Presidency Banks were to be amalgamated into a large State Bank, the joint stock and other banks in the country need not apprehend a powerful and inconvenient rival. The Central Bank will manage the note issue and State balances. But the financial conditions in India differ widely from those in England or France and therefore the analogy between the State Banks in those countries and

the proposed All-India Bank is misleading. The Finance Commission will be called upon to consider this question in connection with the financial management of the India Office and of the Government of India.

Future Indian Budgets.

The Hon'ble Sir G. F. Wilson was able to say in the Imperial Legislative Council that Indian finances had attained a position of strength and elasticity which obviated all anxiety in the near future. The opium windfalls, the steadily increasing productivity of the various sources of revenue and the high level of taxation strengthened the hands of the Finance Member and rendered liberal expenditure on many useful heads possible. The place of opium is now coming to be occupied by the railways and the future budgets will be coloured by the condition of this important revenue head. If the Imperial income and expenditure are balanced by the estimates of railway revenue, they are likely to spell disaster as much as prosperity. Mr. D. E. Wacha, the diligent and thoughtful student of Indian finance in Bombay, has come forward to point out this feature of the coming Indian budgets. He contends that if we are to have a correct apprehension of our revenue proper and expenditure proper, the future budgets ought to exclude what are called commercial services. For this it is necessary to exhibit separately the accounts for railways and irrigation from borrowed capital so that the tax-payer may see in its true perspective the position of Indian finance from year to year. If the opium revenue and provincial adjustments are excluded and the current year's budget is re-arranged in the light of the above remarks, Mr. Wacha shows that our *true* budget will exhibit a deficit of more than 12½ crores of rupees. Railway and irrigation revenue is not revenue derived from taxation proper. If the gain or loss from the two productive public works is kept separate, Mr. Wachta thinks that Indian finances will gain immensely in stability. He is right in saying that our present surpluses are no true surpluses, not being an excess of ordinary revenue from taxation over ordinary expenditure. He therefore suggests that the gain from railways and irrigation should be set apart for further development and extension of railway and irrigation works. This will result in a reduction of the amount that is annually borrowed for these purposes and diminish the interest charge to the tune of a quarter of a crore every year. From the point of view of a clear comprehension of the financial position, Mr. Wacha's suggestion is eminently useful. But it may be asked, how is the gap of 12 crores of rupees created by the adoption of the suggestion to be filled up? Retrenchment and economy will not be sufficient, and fresh taxation is the only alternative. How will the tax-payer's position be improved if fresh taxation is imposed upon him and the Government will be giving away with one hand what it receives with the other. Mr. Wacha's arrangement will be feasible and desirable if the income and the expenditure could be balanced irrespectively of the revenue from railways and irrigation. How this is to be done is the question. Mr. Wacha's suggestion, however, deserves careful consideration.

Cotton Mill Industry.

Being the only indigenous modern industry conducted mainly by Indians, the cotton mill industry has a peculiar interest for the people of this country. The prosperity of the cotton mills depends largely upon the state of the season, the price of the raw material and the condition of the American cotton crop. Though the industry is no longer confined to the Western Presidency, Bombay yet easily leads. It is gratifying to see that the past year for which the Bombay Mill Owners' Association has issued its report, was one of considerable prosperity. The harvests were satisfactory, there was a general improvement in the condition of the ryot and the foreign trade, both in imports and exports, showed a marked advance. Though prices were dear all the year through, there was a fair margin of profit between the raw staple and the manufactured goods, which was steadily maintained to the advantage of the

spinning and weaving mills alike. The steady progress that the mill industry is making may be seen from the fact that the quantity of yarn produced in India, during the official year 1911-12, amounted to 625,030,199 lbs. as against 609,927,141 lbs. during the previous twelve months or an increase of 2·47 per cent. and the production of cloth in the same year amounted to 1,136,151,590 yards as against 1,042,741,653 yards, an increase of 8·95 per cent. The exports of cloth to foreign countries showed a decrease of about 18½ million yards compared with the previous year. Indian mill owners must find a growing serious rival in Japan in the Chinese market and the exports to China have been falling off. But the exports from Bombay, during the calendar year 1912 showed an increase of 240·18 per cent. Out of a total of 268 mills in the whole of India, Bombay Island claimed 86 in 1912. In the same year there were in the Bombay mills 109,691 hands out of a total of 243,637 for the whole country. Out of the total amount of cotton consumed, *viz.*,2,050,102 bales (of 392 lbs. each) by all the Indian mills, Bombay's share was 1,077,616 which works at nearly one-half of the whole. It is worthy of note that a very large percentage of the yarn produced by the indigenous mills was absorbed by the mills themselves in the production of cloth and only a fourth was exported to foreign countries. This is a sure indication that the mills are becoming more and more self-supporting and less dependent on China and other foreign countries. That there is enormous scope for the consumption of the Indian mill made goods is obvious from the huge imports from the United Kingdom. In these days of hard competition, it is equally essential that our mills should turn their attention to finer counts so as to meet foreign manufactures with success. They are, indeed, slowly advancing in this direction but more strenuous efforts will have to be made than at present. No discussion of the condition and prospects of the mill industry can be complete without a reference to the unjust and unjustifiable excise duties against which our people have long been protesting. Though there is no hope of the impost being repealed, the Bombay mill owners are determined upon carrying on a ceaseless agitation against it. In this they will receive the cordial support of the united public opinion in the country. Satisfactory as the progress of the Indian cotton mill industry appears, so far as it goes, it is nothing when compared to the remarkable strides made by the Lancashire mills during the past few years. A few figures will bring out this sharp contrast. Of the world's 130,000,000 spindles, Great Britain runs 55,000,000. For raw material alone, England pays £60,000,000 annually. The annual value of its cotton manufactures is estimated at £135,000,000 and the value of its exports at £110,000,000. The difference between the value of the raw material and that of the manufactured goods, *viz.*, £75,000,000 represents the large amount that is annually devoted to wages, mechanical equipment, dividends and interest on loan deposits, etc. The general efficiency of the Lancashire mills has kept pace with or is the cause of the remarkable advance evidenced by the above figures. This progress typically accounts for the growing prosperity of Great Britain.

The British Budget.

The British budget for the current year shows how Great Britain is riding on the crest of an unprecedented prosperity wave. The Chancellor of the Exchequer was in his most optimistic mood and described the last year as the most prosperous ever known. He stated that the tide of affluent trade was so high that it had overwhelmed three serious obstacles, the coal strike, bad harvest and the Balkan War. One of the most striking achievements of the Liberal Ministry has been in the realm of finance. The party is pledged to retrenchment, economy and social reform. The Ministry has, to a large extent, redeemed its pledge but it has not been able to cut down or restrain the growth of the naval expenditure. Mr. Lloyd George estimates the expenditure for 1913-14 at £195,640,000 and

sees no prospects of decrease unless there is a fundamental change in the policy of nations. His forecasts are based upon the assumption that England is entering on the most glowing year that British trade has ever seen. His anticipations are supported, he tells us, by the opinion of business men whose views are entitled to weight. We, in India, who are accustomed to extreme caution in financial estimates and 'the gamble in rain,' cannot but regard Mr. George's optimism as unduly hazardous. The miscellaneous increases the Chancellor anticipated in revenue, still leave him £815,000 short and he has to take a million from the exchequer balances deposited owing to short expenditure in the navy. This balancing of the income and expenditure has been characterised as the perilous performance of a rope dancer. In discussing Mr. George's budget statement, Mr. Austen Chamberlain said that he viewed with anxiety the manner in which every available penny was being spent and no thought was bestowed upon a reserve for possible bad times. Whatever truth there may be in this Opposition criticism, Mr. George could proudly point out the achievements of the Ministry in the field of finance. He observed that by the end of the year the national debt would have been reduced by 102 millions and a saving of more than 2½ millions in interest effected. The Liberal Government has reduced taxes on food by five millions and on small incomes by 2½ millions. It has also provided 12 millions more for the national defence and 20 millions for the aged and sick. Trade is at its best, unemployment at its lowest and profits at their highest. The Chancellor has not been able to reduce taxation and he may take credit for not having had to enhance it. The boom in British trade and the general prosperity have upset the ominous calculations of the Tories who thought the Liberal ministry would be hard put to it to balance the national income and expenditure without broadening the basis of taxation. The outlook for tariff reform is gloomier than ever.

Special Articles.

THE IMPROVEMENT OF INDIAN AGRICULTURE,

BY DR. N. KUNJAN PILLAI, M.A., B.SC., PH.D., *Director of Agriculture, Travancore.*

[Last month the writer dealt with the selection of the crop to be grown, the preparation of the land therefor, and the methods of finding out the most suitable manures.—ED., *W.I.*]

II

Next to manures the most important question for consideration in Indian agriculture is that of seeds. It is a well-known fact that the production of healthy and vigorous plants depends upon the use of good seeds. It cannot be said, however, that the farmers of this country, though they are aware of this fact, make practical use of it. They do not as a rule pay any attention to the selection of seeds. When the crop is harvested, the whole produce is collected, a portion of it is then set apart for seed and the rest for home consumption or sale. Then again, no attempt is made to keep the varieties of seeds pure. Owing to carelessness in collection, different varieties get mixed up, and these, when sown, germinate at different times, and consequently the crops mature irregularly, resulting in a considerable reduction in the yield. A careful farmer will avoid these mistakes in the collection and use of seeds. He will take care that he keeps only the best produce for future sowing and he will take every possible precaution to prevent the mixing of different varieties of seeds.

Seeds by continuous use for a number of years tend to degenerate and must therefore

be improved from time to time. This is done in two ways, (1) by crossing plants of different varieties but of the same species and (2) by improving the seed of the same variety by careful selection. The first method is too scientific and can be undertaken only by botanical experts. Marvellous re ults have been achieved in Europe and America by this method. Mr. Burbank, a well-known agricultural botanist of the United States, has produced, for example, a thornless variety of cactus which is an excellent fodder for cattle by crossing two useless varieties. Similar work is now carried on in several stations in England, Germany, the United States and other countries by eminent botanists, and they are often bringing out in the market, numerous new and improved varieties of the seeds of cultivated plants. On a smaller scale this work has also been started in the Imperial Agricultural Research Institute at Pusa with wheat and a few other crops; but it will be some years before we can expect any conclusive results therefrom. The method of improving seeds by crossing is, as I have already pointed out, the work of scientists and not of farmers, while the second method of selection is what even an ordinary farmer can carry out. Selection of seeds must begin with plants and must be continued to seeds. The selected seeds must be sown in a special plot and the best plants and the best seeds from these must again be selected. This process must be repeated several times if necessary until the seeds obained are found to be decidedly superior to the original seeds. By this process, the seeds of common crops, such as paddy, cocoanut etc., can be improved and made more prolific than they are at present. The question, in my opinion, deserves the careful attention of all practical farmers.

In the matter of sowing, there is considerable room for improvement in India. Broadcasting is the usual method practised by the farmers of this country. A better method than this is drilling by means of machines. In other countries, several complicated and costly appliances are used for this purpose, but in some parts of the Madras Presidency, a simple machine called *Goru* costing about Rs. 10 to 12 is largely used. None of these machines have as yet found their way into the Malabar Coast, though the conditions obtaining here will permit of the introduction and popularisation of a machine like the *Goru*.

The advantages of drilling over broadcasting are, (1) the seeds will be distributed uniformly over the field and (2) it will afford better facilities for weeding and interculturing. In drilling, the seeds fall in rows and the spaces between the rows can be weeded and intercultured by a small bullock hoe which is decidedly better and cheaper than hand-weeding and hand-hoeing. With regard to paddy, drilling is possible only in the case of *podi* cultivation. In *tholi* cultivation, the usual practice is to transplant seedlings from the nursery. With regard to this it has been found by experiments conducted in several places that the system of transplanting single seedlings is in every way superior to the present practice of planting them in bunches. Through my advice several ryots in Travancore have tried this new system and all of them have reported very favourably on the same. The secret of success in this system lies in the fact that seedlings when transplanted singly get sufficient space, light and air for their healthy growth and they consequently put forth a number of tillers. In some cases I have seen as many as 50—60 tillers from a single seedling. When the seedlings are transplanted in bunches they do not get a chance to put on a luxuriant growth and develop tillers. The principle that ought to be kept in mind is that every plant requires a certain minimum space, light and air for its proper development. If these are reduced beyond the minima, the growth of the plant will be arrested and the yield will become poorer. This remark applies not only to paddy but to every crop. In the case of cocoanut, for example, every one who has experience in its cultivation knows how thick planting affects the yield. Most of the cocoanut cultivators in Travancore seem to be labouring under the false idea that the more the number

of trees they plant in a given area the greater will be the yield. There are places where an acre carries as many as 150 to 160 trees, though under ordinary circumstances there ought not to be more than 50 to 60 trees per acre. Where there ought to be one tree, two or three trees are planted and the consequence is that none of them get sufficient foodstuffs for their healthy growth and maximum productivity. The result is the same as if the food that will just suffice for one man is distributed among two or three men.

I do not wish to continue the discussion of this question any further and I shall therefore proceed to the consideration of the next point, namely, the question of after-cultivation. Weeding and interculturing are the two main processes that come under this head. It is hardly necessary for me to point out the importance of weeding, for it is a fact known to all that the growth of weed is highly injurious to crops. Weeds, like crops, require plant foods and they get them chiefly from the soil. If therefore weeds are allowed to grow among crops, the soil will naturally become poorer and to that extent the crops will be deprived of their food. In most cases, weeds, on account of their quick growth and hardy nature, may even kill the crops. Moreover weeds are usually the harbouring places of insects and the rank growth of weeds will therefore facilitate the attack of insect pests on crops. For these reasons, it should be the duty of every farmer to see that his fields and compounds are kept clean and absolutely free from weeds when they are under crops.

The question of interculturing is as important as that of weeding. Unfortunately it does not seem to engage the attention of our farmers as much as its importance requires. In a country like India, where crops very often suffer from drought, the aim of the farmers ought to be to conserve as much moisture as possible in the soil. During the monsoon periods we have abundant rainfall; but more than $\frac{3}{4}$ of this water is lost by drainage, percolation and evaporation, so that when the rains cease practically the soil also gets dry. How to prevent this wastage of water is one of the problems that science has to investigate on behalf of agriculture. This matter has already been investigated in part by some of the American scientists who have shown that the loss of moisture by evaporation from the soil will be considerably less if the soil is kept stirred from time to time by the hoe of the cultivator. It is this discovery that has led to the adoption of the system of dry farming which is fast gaining ground in several parts of America. This system deserves, in my opinion, to be introduced into all those places in this country where drought does damage to the dry crops.

So far, I have dealt with the different processes in the cultivation of crops, and now we have to consider how they are to be protected from their enemies. The most formidable enemies of crops are insect pests and diseases. The loss that the farmers of this country suffer annually on account of the ravages of these enemies can be counted in lakhs of rupees. The attack of a small caterpillar, for example, will sometimes ruin hundreds of acres of paddy. How the attacks of these insect pests and diseases are to be effectively combated is a problem that calls for serious and immediate consideration. The first step in the solution of this problem is the study of the habits of the insects, and the nature and causes of the diseases. Only after careful investigation on these points will it be possible to find out the effective ways of fighting the enemies. This work should be undertaken by special entomologists and mycologists, and the farmers have only to act up to the instructions given by them. The ancient proverb "Prevention is better than cure" applies to crops just as well as to men and animals. One important fact that has to be borne in mind in this connection is that, ordinarily, plants which grow under unhealthy conditions and have become weak by partial starvation, are more susceptible to the attacks of insects and diseases than others. The careful tending of crops is one of the best preventions against all kinds of diseases. If how-

ever a disease by unforeseen circumstances does break out, it has to be investigated by experts who alone will be able to find out the effective methods of fighting it out. The subject of insect-pests and diseases is a very wide one and requires careful study and investigation in India.

The last point that I wish to touch upon in connection with the possible improvements that may be effected in our agricultural methods is the question of harvest and preparation of the produce. Harvesting and thrashing are generally done in England and other countries by machines. The commonest machine for harvesting is a self-binding reaper worked by a pair of horses and the machine for thrashing is generallly driven by mechanical power. Almost every farmer in those countries has at least one or two binders and a thrashing machine, while some of the rich farmers use power driven thrashers as well as binders. In America a machine has been invented lately which is a combined binder and thrasher. In one operation, this machine cuts the standing crop, thrashes it, separates the grain from the chaff, and throws out the grain, the chaff and the straw through three different parts. Machines like these are too costly and are unsuited to the conditions of this country. Owing to the peculiar system of paddy cultivation we follow, it is doubtful whether any kind of machine can be used for the harvest of this crop. There are however ample facilities for the introduction of thrashing and winnowing machines. It is not possible and not even necessary for each farmer to buy a thrashing machine; it is enough if one is purchased by a number of them together. The winnowing machine is used for the separation of chaff from the grain. The thrasher generally contains the winnower also and the latter is available as a separate machine which, owing to its comparative cheapness, even individual farmers can afford to purchase.

The use of labour-saving machinery is one of the possible ways of reducing the cost of cultivation. It must however be remembered that the wholesale introduction of all the machines that we read about in newspapers and journals is not feasible in India. This is a matter that has to be carefully experimented with, and it will give work for several experts for many years to come.

ESSENTIALS OF ECONOMIC PROGRESS.

By Mr. V. G. Kale, M.A., *Professor of Economics, Fergusson College, Poona.*

We are pressing upon the Government in India the extreme urgency of adequately providing for technical education in all its branches and grades in this country. The problem of finding employment for failed and even passed B.A.'s and Matriculates is every-day causing more anxiety. The public services cannot any longer absorb the output of our schools and colleges and the need for supplying the young generation with decent and independent means of livelihood has become very keen. The bulk of the population subsists upon agriculture which is barely remunerative and the indigenous industries and manufactures are too few, crude and small to relieve the tension of the insistent demand for employment. The development of old and new industries and the imparting of scientific and technical training in special institutions for the purpose were thought of as proper remedies. But it has been discovered that in this path so chalked out there are so many obstacles to be overcome that not much relief could be hoped for therefrom in the immediate future.

In the first place, the young men who go in for school and college education in this country come from the class which is usually called the gentry. They have no liking for the sort of work a technically trained man is expected to do. Young men turned out by

technical schools are called upon to do hard physical work and rub shoulders with members of what are socially regarded as inferior castes. To them this is detestable and they would rather prefer sedentary clerical duties on half the salary. Secondly, only a few of those who receive higher technical education have any chance of employment adequate to the training undergone. The higher rungs of the ladder are occupied mostly by Europeans and they are asked to be contented with a low remuneration and strenuous work. Thirdly, whatever demand there is for employes in mills and factories, is confined to foremen and low paid skilled workers. These are usually trained and equipped in the old fashion in the factories themselves where they enter at an early age. Fourthly, as regards the starting of new enterprises where the genius and education of specially trained men is expected to shine, these men are not usually trusted, they have no capital of their own to make experiments and they fail to fulfil the promise vouchsafed by their educational careers. Fifthly, it is the sons of people of moderate means who, in the majority of cases, enter upon the technical courses and they cannot afford the time and the money to obtain practical experience or test their theoretical knowledge. Sixthly, the technical training available in Indian institutions is very meagre and cannot equip the student for the higher branches of engineering. Seventhly, students who go out to England have to encounter great difficulties in getting admission to factories and works and on their return to this country get no scope for activity. They cannot also apply their knowledge to indigenous conditions with any measure of success. And lastly, there is hardly any co-operation between technical institutes and employers of labour in India.

England has now gone through all the stages of industrial development and the field for employment and recruitment is now very wide. The large variety of industries and manufactures flourishing there opens useful and fruitful avenues of work for all classes of young men. In Germany, America and Japan, the Governments have taken special pains to provide technical education of every grade on a liberal scale and the field of employment for the young men there is extensive. In England, the large majority of directors and managers of factories and mills are men who have risen from the ranks and the most popular system of technical and scientific training there is that of the evening classes. Though it has proved eminently successful so far, this system has now been seen, in these days of keen competition, to be unsuited where adequate training in the higher branches of the profession is concerned. Engineering institutions of Germany have thrown England into the shade and English engineers have to adopt some of the inventions made by the Germans, rendered possible by the higher scientific education that is available there. In his presidential address to the Liverpool Engineering Society delivered some time ago, Prof. W. H. Watkinson invited special attention to this aspect of the question: "Greater value had been attached in this country," he observed, "to the art than to the science of engineering with the result that the Germans were better fitted to develop those branches which were more dependent on scientific knowledge." In the United States, he went on to say, there were in 1908-09 approximately 17,700 engineering students in the principal schools, a number that was more than double what it was six years previously. In the technical high schools of Germany, there were last session about eleven thousand students who were taking the regular degree courses in engineering, shipbuilding and mining, or, with 5,000 not qualified to take such courses, a total of about 16,000 students. Compared with these figures, England, Wales and Scotland combined together came at a long distance with a poor 2,000. In other countries, employers co-operate with the technical schools in assisting students to obtain practical training. American students are more resourceful and self-reliant than their British brethren and

manage to earn a living even while in the Universities. English students have to encounter the same difficulty in this respect as the Indians, as they cannot afford the three years' apprenticeship or the payment of a premium. We have to congratulate ourselves that the Government of India have directed their attention to this matter and many of the large employers of labour in the country have expressed their willingness to take up paid apprentices. The problem in India is an extremely tough one and the efforts at improvement to be effective, have to be many-sided, sustained and strenuous. The difficulties with which the question is surrounded, have been briefly indicated above. The Universities of Calcutta and Bombay are making liberal provision for scientific education. New technical scientific institutes are rising and many young men have taken to industry and manufacture with success. Additional openings are sure to be provided for technically trained men. The Supreme Government as well as the local Governments must take up the question of technical education, not as an isolated problem but in conjunction with the general education of every grade and kind, and liberal provision will have to be made for the imparting of the same. We have many old industries to preserve and several new ones to start. The methods to be followed in the two cases cannot but be different. Not only must education be widely diffused, but it must be adapted to the changing conditions of the country. The social manners and customs of the people, their likes and dislikes and their ideas about work must undergo a radical change. The dignity of physical labour ought to be appreciated better by the people of the so-called higher classes. Professions can no longer be the monopolies or privileges of particular classes and the whole field is now open to all and sundry, Technical education is only one of the essential things that make for industrial and economic progress and unless the other things are forthcoming, will not be of material value. Enterprise, co-operation and mutual trust and commercial honesty are the radical needs of the day and where they are met with, economic and industrial progress is evident. Fixing the gaze only on one of the points involved in the situation, is responsible for the failures we often encounter and the disappointment which is its inevitable consequence. Abundant provision for technical and scientific education is, no doubt, an urgent desideratum ; but let us not pitch our hopes too high upon immediate results in the absence of the other equally necessary conditions. We are moving, though very slowly, in the path of economic advancement and the experience we are gaining, must be our guide in the new environments in which we find ourselves. The present brief article is intended to bring into relief the place technical and scientific training has in the industrial progress of India and to emphasise the need to take a comprehensive view of the situation.

General Statement of the Revenue, and Expenditure charged to Revenue, of the Government of India, in India, and in England.

——	Accounts, 1911-1912.	Budget Estimate, 1912-1913.	Revised Estimate, 1912-1913.	Budget Estimate, 1913-1914.
Revenue—	£	£	£	£
Principal Heads of Revenue—				
Land Revenue ...	20,764,697	21,276,000	21,244,900	21,399,900
Opium ...	5,961,278	3,622,000	5,062,800	1,445,000
Salt ...	3,391,212	3,427,800	3,336,700	3,405,300
Stamps ...	4,815,129	4,908,000	5,095,800	5,231,500
Excise ...	7,609,763	7,907,900	8,173,700	8,416,900
Customs ...	6,468,567	6,398,300	6,984,600	6,862,100
Other Heads ...	5,194,604	5,217,800	5,453,200	4,919,100
Total Principal Heads ...	54,205,240	52,757,800	55,351,700	51,680,500
Interest ...	1,448,741	1,227,300	1,463,900	1.287,300
Post Office ...	2,134,279	2,218,900	2,259,500	2,360,800
Telegraph ...	1,087,425	1,065,100	1,142,000	1,191,800
Mint ...	367,100	205,700	532,000	240,600
Receipts by Civil Departments ...	1,238,131	1,226,600	1,295,300	1,296,300
Miscellaneous ...	813,076	5,52,400	713,100	589,200
Railways: Net Receipts ...	15,891,725	14,540,200	18,217,400	17,623,500
Irrigation ...	3,980,052	3,921,100	4,362,900	4,403,900
Other Public Works ...	326,924	320,900	300,900	286,900
Military Receipts ...	1,343,057	1,318,000	1,346,600	1,361,000
Total Revenue ...	82,835,750	79,354,000	86,985,300	82,351,800

——	Accounts, 1911-1912.	Budget Estimate, 1912-1913.	Revised Estimate, 1912-1913.	Budget Estimate, 1913-1914.
Expenditure—	£	£	£	£
Direct Demands on the Revenues	8 670,174	8,856,800	8,743,100	9,469,700
Interest ...	2,037,735	2,045,200	1,807,900	1,310,000
Post Office ...	2,008,470	2,049,200	2,036,400	2,057,200
Telegraph ...	1,093,934	1,094,500	1,121,100	1,231,000
Mint ...	116,507	101,400	142,300	103,700
Salaries and Expenses of Civil Departments ...	16.466,166	17,477,300	16,722,900	19,434,500
Miscellaneous Civil Charges ...	4,898,823	4,908,100	4,940,400	5,087,000
Famine Relief and Insurance ...	1,000,000	1,000,000	1,000,000	1,000,000
Railways: Interest and Miscellaneous Charges ...	12,103,955	12,518,300	12,601,300	13,071,200
Irrigation ...	3,174,883	3,314,900	3,313,100	3,564,600
Other Public Works ...	5,554,048	5,655 200	6,193,600	6,513,100
Military Services ...	20,901,637	20,412,500	20,982,000	21,007,800
Total Expenditure, Imperial and Provincial ...	77,926,332	79,433,400	79,604,100	83,849,800
Add—Provincial Surpluses: that is, portion of allotments to Provincial Governments not spent by them in the year ...	1,414,027	...	4,019,300	...
Deduct—Provincial Deficits: that is, portion of Provincial Expenditure defrayed from Provincial Balances ...	444,943	1,557,700	...	2,839,200
Total Expenditure charged to Revenue ...	78,895,416	77,875,700	83,623,400	81,010,600
Surplus ...	3,940 334	1,478,300	3,361,900	1,311,200
Total ...	82,835,750	79,354,000	86,985,300	82,321,800

The Agricultural World.

Ashes of Rice Husk.

AN Enquirer writes:—" With reference to the extract at page 172 of the March number of the *Wealth of India* under the head 'Green Manures,' will you or any of your readers favour me with information on the question whether ashes of rice husk will serve the purpose of "wood ashes" mentioned in the extract."

Rice husk is almost worthless as a cattle food but it is of great value as a manure because of the high percentage of postash it contains. It is a very common practice with agriculturists to basket away all the rice husk and chaff they can get to be spread over the fields as manure. The fact that they are burnt and reduced to ashes will not apparently deprive the potash value of the husk.

Arsenic in Plants.

Readers of annual reports of the chemical examiners of the Governments in India will easily recall to their minds the harrowing tales of poisoning by arsenic in India. Yet this substance which is a poison in large doses is a tonic in small doses and that is probably why nature has provided it in the vegetables we may eat. It seems that arsenic is of general occurrence in plants. This element therefore must be of importance for the activity of the protoplasm.

Even parasitic plants, not in direct contact with the soil, contain arsenic, which is indispensable for their proper development Further, there is no relation between the amount of arsenic in the parasite and that contained by the host plant.

From the arsenic content of any given plant, it is not possible to deduce accurately the amount present in plants belonging to the same botanical group.

In any individual plant, the green parts contain more arsenic than those which are not expos d to the light.

One of the sources of the arsenic normally present in the organs of animals is the plants which have provided them with food.

Farming by Dynamite.

Farming by dynamite or explosive can be used with advantage for the following purposes :—

(1) To break up hard or virgin soil, to facilitate, and thereby reduce the cost of, ploughing.

(2) To blast out, for removal, boulders, rocks and especially tree-stumps and entire trees.

(3) To aerate subsoils and counteract any tendency of the ground to become infested with pests.

(4) To break up lands, hard or soft, so as to equalize the water-supply, to encourage drainage, or to facilitate the digging out of the deep gullies, drains, etc.

(5) To make holes for planting trees (at the same time rendering the surrounding soil free of insects), and for putting in fence posts, uprights for buildings, etc.

(6) To destroy locust swarms, tsetse flies, and other pests, especially where they can be attracted to a given centre by bait; or to kill their grubs, etc., in the soil where known to abound.

At the same time, it must not be thought that the use of explosives does away with the necessity of ploughing, for it is quite otherwise. Their use only expedites and facilitates, thereby cheapening the cost of, ploughing and general cultivation, especially deep ploughing or gullycutting. Explosives bring up plant foods to the surface that would otherwise not be available, or else they liberate such food by opening up the soil, at the same time enabling the water and roots of the trees to go down and come into contact with the plant food and draw them for transport up the trunks to the crowns of the plants. This is especially the case with subsoils in cocoanut lands.

Manurial Experiments.

Some very important results achieved with experimental manures are recorded in the Annual Reports of the Burdwan and Cuttack Agricultural Stations for the year 1910-11. At both stations it has been found that the ploughing in of *dhaincha* for paddy is the most economical of all systems. Mr. A. C. Dobbs, who has written the Burdwan Report, says that as much as possible of the paddy area from the farm is treated in this way, and the remainder is manured with bonemeal and superphosphate. The rotation of the two methods is maintained as far as practicable, the area that can be sown with green manure being limited by the rainfall and the amount of water available for irrigation. The use of bonemeal in combination with saltpetre has given striking results. At Cuttack it was found that three maunds of bonemeal in combination with saltpetre, gave results almost equivalent to one hundred maunds of cowdung, while, on the Burdwan farm, an extraordinary return was obtained from the use of three maunds of bonemeal with one of saltpetre. The method adopted for sugarcane at Burdwan is to use farmyard manure, oilcake, and bonemeal before planting, and to apply saltpetre as a top dressing to the growing crop at intervals, when there is no danger of its being washed away by heavy rains. These are all indigenous manures, the last three being at present largely exported ; and the experience gained at Burdwan, Cuttack, and Dumraon leaves no doubt that their judicious use on sugarcane will pay well.

Milk Production.

At a meeting of the East Sussex Farmers' Club, Mr. Hacking described some experiments carried out by the Lancashire County Council, which, he said, proved that milk could not only be produced in greater quantity but at a cheaper rate than many paid for food. At Wye College, it was found that the average daily yield per cow from 1,957 cows, on 60 farms was 2·24 gallons, while in the experiment he described in detail, the average daily yield was found to be 2·84 gallons by using bean meal, 2·76 gallons for undecorticated cotton cake, and 2·91 gallons for gluten meal. It proved unmistakably that by judicious and systematic feeding the quantity could be increased. The question was whether that increase could be produced economically. In the Wye experiments, the average cost of food per gallon was 6·58*d.*, while in the experiment he had described the average cost was: Bean meal, 4·75*d.* ; undecorticated cotton cake, 4·34*d.*; and gluten meal 4·45*d.* That showed that not only could the milk be increased, but it could be increased at a lower rate per gallon, for while in the former case the average cost was 6·58*d.*, in the latter in every instance it did not exceed 4¾*d.* It was shown that the average cost of food per cow per day was 14·88*d.*, but in the other experiment, it was found that the cost was 13·6*d.* for bean meal, 12*d.* for undecorticated cotton cake, and 13*d.*, for gluten meal. By a comparison of the figures, he thought he had shown that it was possible to improve upon the general production in actual practice. But if they wished to produce large quantities of milk at an economical rate, do not let them imagine that feeding alone would do it. It would assist, but it was also necessary to pay particular attention to their stock for breeding purposes.

Application of Fertilizers to Trees.

According to J. Wagner, Ph.D., Prof. of Agriculture, Luxemburg, whose views are summarised in the *Bulletin of Agricultural Intelligence* for February, the application of fertilizers to trees in general, and to young trees when they are planted out, in particular, is a very vexed question.

He considers the following three points :

(*a*) The situation of the roots of the tree in the soil.

(*b*) The nature of the young tree, its susceptibility to fungus diseases.

(*c*) The method of action of different fertilizers.

An account is given of the following method. The chemical fertilizers (phospho-potassic) are well mixed with the superficial soil, which is to be put first of all in the trench ; then comes a layer of ordinary soil 8 to 12 inches deep, next the nitrogenous fertilizer, if this is used (nitrate of soda, sulphate of ammonia, guano, etc.), and finally, the last layer of soil to fill up the trench.

The soluble nitrogen in nitrogenous fertilizers finds its way gradually to the roots ; thus a nitrogenous fertilizer of a very caustic nature is no longer in direct contact with the roots where it might be harmful.

The organic manures are placed in an intermediate layer, neither too deep nor too superficial, and without being in direct contact with the roots they do not incur any risk of loss or of drying up ; they are besides rendered powerless as propagators of fungus diseases.

The phosphoric acid and potash contained in less mobile artificial fertilizers are directly within reach of the roots and can be absorbed as they become capable of assimilation.

The writer adds that it is well to give the young tree for about three years, in some form or other : 25-30 gr. (about 1 oz.) of nitrogen, 30-40 gr. (1 to $1\frac{1}{4}$ oz.) of phosphoric acid, 40-45 gr. (about $1\frac{1}{2}$ oz.) of potash, 25-30 gr. (about 1 oz.) of lime, which about corresponds to : 7 oz. of nitrate of soda, 7 to 9 oz. of basic slag, or the corresponding weight of superphosphate, and 3 oz. of potassium chloride. If the soil is not too poor in lime, the lime contained in the slag suffices. The fertilizers, in the amounts calculated for three years, should be applied on the surface, and at the end of this time should be dug in as deep as possible, so that they may reach the roots.

The Farmer's Interest in Good Seed.

The Rev. W. M. Zumbro, Principal of the American Mission College, Madura, recently read a paper on the farmer's interest in good seed, and the following is a summary of it :—

A seed is a living organism, and must be dealt with as such if good results are expected when put under favourable conditions for germination. The first factors determining the validity of a seed are maturity, weather conditions at the time of harvesting and methods of harvesting and curing. Seed harvested in damp, rainy weather is much weaker in vitality than seed harvested under more favourable conditions. Likewise, seed once injured will never regain its full vigour. The curing of the various seeds is of the utmost importance, and great care should be taken to prevent excessive heating, otherwise the vitality will be greatly lowered. The life period of any species of seed, granting that it has been thoroughly matured and properly harvested and cured, is largely dependent upon environment. Experiments have shown that moisture is the chief factor in determining the longevity of seeds as they are commercially handled. Seeds stored in dry climates retain their vitality much better than when stored in places having a humid atmosphere. The deleterious action of moisture is greatly augmented if the temperature be increased. Not infrequently is vitality destroyed within a few weeks or months when the seeds are stored in warm moist climates. If stored in a dry climate, the question of temperature within the normal range is of little moment. The storage room for seeds as they are ordinarily handled should always be dry. If seeds could be kept dry, and at the same time cool, the conditions would be almost ideal for the preservation of vitality. The most feasible method for keeping seeds dry and thus insuring strong vitality is to store them in well-ventilated rooms. This method of treatment requires that the seeds be well cured and well dried before storing. If one would have in his field the largest number of strong vigorous stalks of grain-producing large ears well filled with plump and large grains, he must carefully select and preserve the seed to be sown in his nursery.

Bacteria in Soils.

The University of California Publications in Agricultural Sciences contains an interesting paper read by Mr. Charles B. Lipman before the Society of American Bacteriologists,

Washington, on December 27th, 1911. Mr. Lipman in concluding his paper observes that investigations of the distribution and activities of bacteria in soils of the arid region show :—

1. That samples of soil for studying the flora of each layer of soil can best be obtained from a hole twelve feet in depth with at least one vertical wall, the latter when sterilized being sampled.

2. That tin tubes ten inches long and about one inch in diameter closed at one end and cotton-stoppered are best for collecting the samples.

3. That the solution method for studying the soils, despite its many drawbacks, is the most feasible one to employ.

4. That soils of the arid region at all depths studied show ammonifying powers which, however, are generally most vigorous in the first six or eight feet. In one case ammonification was noted in soil from a depth of fifteen feet, or adjoining the water-table.

5. That nitrification is found commonly down to a depth of five to six feet in soils of the arid region. In one case soil from the eight-foot depth showed a vigorous nitrifying power.

6. That nitrogen fixation through Azotobacter does not go on below two feet in the soil usually, but has been found in some soils at three feet and in one soil down to four feet. Many soils in the arid region, otherwise favourably constituted, do not contain Azotobacter organisms.

7. That from the point of view of ammonification and nitrification, soils in the arid region differ markedly from those in the humid region when the lower layers of soil are considered. The difference is not marked as regards nitrogen fixation.

8. The results above recorded help to explain the favourable physical and chemical constitution of our soil and also the deep rooting of plants so characteristic of the arid regions.

The Nitrogen Content of Plants.

A recent issue of the Bulletin of the Bureau of Agricultural Intelligence and of Plant Diseases gives an abstract of a paper appearing in the *Comptes Rendus de L'Academie des Sciences*, Paris, dealing with this subject. It points out, first, that Isidore Pierre had discovered that the weight of the dry matter and of ash in wheat diminishes from the time of flowering until the grains are mature, and that Joulie had found the same to be true for all cereals. The fact that the losses vary with different plants and the circumstance that they are very irregular have caused the author of the paper to make further investigations regarding the matter, using barley as the plant cultivated.

It seems from the results that the dry matter in the plant increases regularly up to the time of complete maturity ; after this a lessening takes place. The phosphoric acid content also increases regularly up to maturity but does not take part in the diminution afterward. The facts are the same for sulphur, except for a slight lessening in the content after ripeness.

It is claimed that this demonstrates that both phosphorus and sulphur exist in the plant in a state insoluble in water and not diffusible, such as lecithin, nuclein and albuminoids, and that the phosphorus is also probably in an insoluble state in a mineral form such as the phosphates of lime and magnesia. This would serve as an explanation of the fact that the phosphorus does not diminish even after the plant has attained maturity.

There is an increase in the nitrogen content up to the period of maturity, and after this it suffers considerable loss, which may be as much as 16·4 per cent.

The acid elements considered here have their maximum percentage in the plant at the time of complete maturity. The author does not think that this is the case with the alkaline elements, and he proposes to demonstrate the truth of his opinion later.

Neglect of Agriculture in England.

Mr. Holcombe Ingleby, M.P., contributes a valuable and instructive article to the January

number of the *Empire Review* on the above subject. The contribution is of great interest to us in India, because Mr. Ingleby's arguments for the protection of the farmer in England apply with great force to the agriculturists in India. Mr. Ingleby quotes figures to show that agriculturists have lost enormous sums of money every year under a system of free imports. This loss, he says, is not the only evil which, from an agricultural standpoint, the country has suffered. Partly through lack of employment and partly through discontent at receiving an inadequate wage, the labourer has quitted the soil and the home of his fathers.

Yet other evils lurk behind. What is called the economic condition of the country, *i.e.*, the proper balance in the working of our machinery, has been destroyed. The landlord is not usually an object of sympathy, but where he has depended for his livelihood on the rents derived from his estate, he has had to put up the shutters. The evil is one that is admitted by all parties in the State, but it is mainly the free import system that is responsible for the conditions prevailing.

If this economic condition is pursued one step further, it is seen that all the evils have their root in the neglect of agriculture, which is a primary industry on which all life depends. Agriculture is the one essential, and yet " we have been so supremely foolish as to allow it to languish and droop till in some parts of the country it has died of inanition. One glaring result of this is seen in the wretched housing conditions prevailing in our country districts. The question is a purely economic one. At every turn we are met with this glaring economic difficulty.

"When the urgent necessity of giving strength and stability to agriculture has been advocated by the nearest and readiest means open to us, *viz.*, the protection of our markets from indiscriminate dumping on our shores, we have been met by the labourer in some of our districts, with certain arguments which, though they have no solid foundation, operate so strongly in his mind that he would rather endure the ills he has than permit recourse to be had to the obvious remedy. He is afraid, for instance, that the only result to him of placing a tax on corn will be a rise in the price of bread. He has visions of a return to what are known as " the hungry forties," and he fears that, judging from the past, the landlord or the farmer will annex the whole of the increased profits that may be realised under a system of protection."

But all these arguments, says the writer, are shallow and will not stand scrutiny. Many instances can be given of the impotence of a tax to affect prices. The second argument, the "hungry forties" bogey is an absurd one in the writer's opinion. And with regard to the third argument, the writer says that " every rise in prices will eventually, if not immediately, have its counterpart in a rise of wages, from which it follows that it is to the interest of the agricultural labourer that prices should be stimulated, for the higher they become, the higher will his wages rise The consumer has for many years past been receiving the produce of the soil at less than cost price. At any rate, it can only be said to be at cost price, because by our system of free imports we have compelled the labourer in the United Kingdom to accept starvation wages. This is not only perpetrating a grievous wrong on an important part of the community, it cannot be good for the State as a whole."

Indeed, says the writer, it is so bad for the State that it would seem to be its positive duty to restore vitality to agriculture, for then the whole body politic will correspondingly benefit. It is imperative that the State should take under its wing the control of the imports to the extent required to give stability to agriculture and restore it to its natural vigour. Only then will a proper economic condition be established in the country. The benefits likely to accrue therefrom are said to be very great and are detailed below—

" In the first place, the housing question in agricultural districts would cease to present any real difficulty. Cottages would spring out of the ground directly a fair rent could be obtained. That in itself would be no small

blessing. In the next place, County Councils could with a light heart pursue their beneficial task of creating small holdings, for these would without question become remunerative ; and let us hope that, following the Unionist plan, they would be permitted to drop the iniquitous method of mulcting the small holder in the cost of purchase and then stealing the land for which he has paid. Thirdly, the farmer would seize the chance which the State would assuredly present to him, of becoming the owner of his land on reasonable terms. Fourthly, the drain on our rural population would cease and the present abortive cry of "Back to the land" would no longer fall on deaf ears, but would become effective. Fifthly, our farmers would once more revert to the growing of wheat, and this necessary of life would no longer be at the mercy of our enemies, should it unhappily be necessary to resort to the dread arbitrament of war. And lastly, just as agriculture would benefit if Tariff Reform brought greater prosperity to our industries, because the purchasing power of the industrial workers would be greater, so our traders in the towns would correspondingly benefit if the agricultural classes had more money to spend."

Intensive Farming in Germany.

Mr. Homer C. Price, Dean of the College of Agriculture, Ohio State University, writes in the *Scientific American* as follows :—

A nation's food supply may be increased either by increasing the area cultivated or by increasing the yield per acre. In America we have been using the former method, and in Germany the latter method has been used. Within twenty years the cultivated area of grains in Germany has not increased over 5 per cent., but within this time the total product has increased over 60 per cent., due to the increased yield per acre. This increase has been due to the application of science to the practice of agriculture and has resulted from a better cultivation and handling of the soil, from the more abundant and intelligent use of stable manures and commercial fertilizers and from the selection and breeding of more productive varieties of crops.

A comparison of yields between single years is of little value because one year the crop may be abnormal due to an unusual season but by taking an average for a period of years a representative yield is given that is a safe basis for comparison. In taking the government statistics of Germany, and making a comparison between the average yields for the ten years from 1883 to 1892 and for the five years from 1906 to 1910, they show that the following increases in crop yields have been secured by the German farmers within twenty years :

INCREASE IN YIELD IN FARM CROPS OF GERMANY IN TWENTY YEARS.

Average Yield Per Acre.

Crop.	Period 1886-1895 Bushels.	Period 1906-1910 Bushels.	Increase in 20 years.
Wheat...	21·2	31·2	47·8 per cent
Rye ...	16·6	28·3	70·0 ,,
Oats ...	34·1	57·5	68·6 ,,
Barley...	24·5	37·2	51·8 ,,
Potatoes	130·0	210·1	61·6 ,,

Practically the same figures for the United States present a very different picture. Our yields are not only in most cases less than one half what they are in Germany, but the percentage of increase has been very much less as shown by the following table :

INCREASE IN YIELD IN FARM CROPS OF UNITED STATES IN EIGHTEEN YEARS.

Average Yield Per Acre.

Crop.	Period 1886-1895 bushels.	Period 1906-1910 bushels.	Increase in 18 years.
Wheat...	12·7	14·7	15·7 per cent
Rye ...	12·7	16·4	29·2 ,,
Oats ...	25·6	29·0	13·3 ,,
Barley...	22·6	24·6	8·8 ,,
Potatoes	73·2	96·9	32·3 ,,

While the yield of wheat per acre in Germany has increased 47·8 per cent. in twenty years, in the United States it has increased only 15·7 per cent., notwithstanding the fact that the yield in Germany is over twice as great as in America. A comparison of the tables will

show that what is true of the wheat crop is true of the other crop yields. The German farmer is not only producing much more on the same area, but he is increasing his yield much more rapidly than the American farmer. And yet the German farmer has not reached his limit by any means, and one of the leading German agricultural authorities, Prof. Wohltmann, said recently that he was confident the German farmers could increase their present yields 40 per cent. within the next twenty years However this may be, it can at least be pointed out that the German crop yields are constantly increasing from year to year, and as yet there is no tendency to go back or even stand still.

What has made this rapid increase and why are the yields so much greater than in America? is the question that naturally arises. Primarily it is due to more intensive systems of farming, and certainly not to land that is naturally more fertile than in America. The German farmer spends much more labor and capital in the growing of his crops than the American farmer. His fields are prepared so that they look like a garden, and the soil is in fine condition before the crop is planted. He is more careful in the selection of his seed and his stand of the crop on the ground is more perfect. He has also learned how to feed his crops with fertilizers. In the first place, he scrupulously saves every bit of waste on the farm and returns it to the land. Stable manures are carefully preserved and then generously supplemented with commercial fertilizers. The German farmer has learned how to use commercial fertilizers, and he knows they are not to be used to replace stable manures, but only to supplement them. He has also learned the necessity of keeping his land filled with humus to make it "crumbly" so that it is easy to cultivate and will hold rain water that falls on it. He does this by growing alfalfa and legumes, by ploughing under green crops, and by the use of stable manures.

But at the back of all this are two causes that are fundamental. First, the active and effective work that the German Government has done to develop agriculture. The European nations shape their policies on a war footing and the standard of efficiency sought is to be able to produce their own food supply in case of war. England long ago staked her security in her navy and sacrificed her agriculture to manufacturing and commerce and gave up as hopeless the producing of her own food supply.

Germany, together with the other continental nations, has maintained high protective tariffs on agricultural products and accepted it as a fundamental problem of national existence to produce in so far as possible her own food supply.

As a consequence an excellent system of agricultural education has been developed and an extensive system of scientific research through agricultural experiment stations is maintained. The governments of both individual States and the general government make generous appropriations for the development of agriculture, all looking toward the one goal—feeding the nation. Chambers of agriculture have been established in the separate provinces and are wielding a tremendous influence in the agriculture of the country. They not only look after the ordinary administrative affairs, such as the enforcement of inspection laws, but they are actively engaged in promoting the business interests of farmers through the organizing of co-operative societies, distributing the immigrant labour and every agency that promises to advance the interest of agriculture.

The second fundamental cause of the rapid development of German agriculture has been the efficient business organizations that the farmers have perfected along co-operative lines. This is particularly true in regard to credit. Intensive farming cannot be developed without an abundant expenditure of working capital, and before the American farmer can increase his yields per acre to anything near what the German farmer has done, he must have capital that can be secured much more easily and at a much lower rate of interest than is the case at the present time.

German farmers, through their land mortgage associations, are carrying at the present time over one billion dollars in farm loans, and they do not pay over 4 per cent. interest for any of it, and in many cases not over 3 per cent. There are also over 16,000 rural banks in Germany that are co-operative farmers' organizations, owned and operated by the farmers and having deposits of $250,000,000. Through these institutions the farmers secure loans for working capital on as favorable terms as is secured by any industrial class. The length of time for which the loan is made and the terms of repayment are adjusted to meet the requirements of agriculture, and in this way the German farmer has a great advantage over the American who almost invariably does his business on too little working capital.

The pessimist who predicts the rapidly approaching time when the farmers of the United States will not be able to produce enough for our own needs, overlooks the possibility of

increasing the production from our present area as Germany has done. There is no reason why America cannot do equally as well if not better. He also overlooks the possibility of adding to our present area by reclaiming our waste lands. The United States Geological Survey estimates there are 100,000 square miles of swamp land in the United States that can be reclaimed by drainage, and in the reclaiming of the arid lands by irrigation, we have made but a beginning. The population of the United States may continue to increase for generations at its present rate and American farmers will be able to produce our own food supply if we foster and provide for our agriculture as do the leading European nations.

Kerosine Emulsion as Insecticide.

Kerosine emulsion is one of the oldest and at the same time one of the best insecticides according to the *Journal of the Board of Agriculture*, Trinidad. Another point in its favour is that the ingredients of which it consists are always to be found on every estate and as a matter of fact in every household. A few precautions are necessary in preparing and applying it, otherwise it will do the plants more harm than good.

The first thing to do is to prepare a good stock emulsion, which means that the oil and the soap water must be churned or swizzled in such a manner that they form a uniform mass looking like whipped cream. There should be no oil floating on the top of the mixture. Another matter of importance is that the mixture should be applied with a spray pump, the finer the nozzle the more effective the solution. In applying the mixture to plants, it must be remembered that it is not the whole plant that is to be sprayed but the insects on it, and in applying it should be the aim to spray only the insects as far as possible. The spray should not be put on in such quantity that it will drip off the leaves or run down the trunks of the trees; all that is required is that the affected parts of the tree be moistened with the fine mist issuing from the nozzle. If too much solution gets into the roots of the trees or shrubs it may cause some damage. The best time of the day to do spraying is early in the morning or late in the afternoon or on a covered day. Avoid the hot sunny part of the day.

PREPARATION OF THE EMULSION AND DILUTING FOR USE.

Stock Solution :—

Kerosine	...	...	2 gallons.
Water ..	...	...	1 gallon.
Soap ...	...	...	½ pound.

Shave the soap fine into the water. Put on fire, an empty kerosine tin does very well, and heat until the soap is dissolved. Remove from fire and add kerosine while soap water is hot; churn with a pump or garden syringe by pumping back into tin or bucket through nozzle of pump or swizzle thoroughly until a thick white cream is formed, this will take about 5—10 minutes. Use rain water when possible. For use dilute with water as follows :—To each one gallon of stock emulsion add 11 and ⅓ gallons water to get 5 per cent. oil emulsion.

,,	5 and ⅔	,,	,,	,,	10	,,	,,
,,	3 and ½	,,	,,	,,	15	,,	,,
,,	2 and ⅓	,,	,,	,,	20	,,	,,
,,	1 and ⅔	,,	,,	,,	25	,,	,,

Agitate the mixture well before applying.

INSECTS FOR WHICH TO USE KEROSINE EMULSION.

Kerosine emulsion kills all insects with which it comes into contact. It is therefore useful for such insects which take their food by sucking the juices of the plants. It may also be useful, for tree inhabiting ants. It is impossible to give a full list of the insects, but some of the following may serve as a guide :—

Ants living on trunks of trees and building nests on them. Spray small and soft bodied species with 10 per cent. solution; if ants are large and have hard bodies, increase oil to 20 per cent.

Mealy bugs on cacao pods, 5 per cent.

Pod hoppers on stems of cacao, 10 per cent.

Scale insects on stems and leaves of cacao, 10 per cent.

Thrips on cacao, 5 per cent. and weaker.

White Orthezia bugs on Crotons, 10 per cent.

Scales on ornamental palms, 5 per cent.

Scales on citrus trees, 5 per cent.

Scale insects and ants on coconut palms, 10 per. cent.

Lace wing bugs on egg plants, 5 per cent.

Lace wing bugs on soursop trees, 5 per cent.

White fly on soursop tress, 5 per cent.

For all above, it is well to repeat spray at intervals of three weeks to kill any insects that may have escaped the first spraying, or hatched from eggs that escaped destruction.

A FEW DONT'S TO BE OBSERVED IN USING KEROSING EMULSION.

Don't spray trees when they are putting out young leaves and shoots.

Don't spray in the hot sun.

Don't use emulsion when the oil is floating on top.

Don't let spray drip from trees.

The Co-operative World.

Co-operative Progress.

IT is usual with the enthusiasts of co-operative progress in this country to hold up Denmark as the country where the benefits derived by agriculturists may be seen at their best. It is well to remember however that a certain amount of educational and economic progress is indispensable if the co-operative spirit is to take root and grow strong in any soil. The Danish peasant is a very hard-working man. His hours of work are generally long and his life is cheap. He is also very honest. The honesty and the mutual trust which follows from it may be taken to be the moral foundation of the co-operative movement in that country. Further, the land legislation of Denmark for the last hundred years has helped the formation of a class of small landed proprietors against large holders. Large holding is discouraged. Thus a large estate may be sold into two or more small estates or divided into two or more farms to be worked separately, but it may not be incorporated with another to form one large farm. The State also helps tenants to buy the ownership of the farms, the money being lent to them on the mortgage of the land, provided they can pay off the cost of buying it. Can these be said of the peasants and the Government in India ?

Mr. Sadasiva Aiyar on Co-operation.

The first Northern Circars Co-operative Conference was opened at Tenali in the Guntur District on the 26th April. The Hon'ble Mr. Justice T. Sadasiva Aiyar, M. L., Judge, Madras High Court, presided. Mr. Justice Sadasiva Aiyar is an intensely religious Hindu who holds that all progress of human society must be broad-based on religion. He put in a good deal of this view in his presidental address. While the Registrar of the Co operative Societies in this Presidency is preaching that co-operation is neither philanthrophy nor charity, but a new method of *business*, Mr. Justice Sadasiva Aiyar speaks of it as 'selfless work' and that in the absence of a succession of selfless enthusiasts, the movement is bound to fail. We give elsewhere in this issue extracts from Mr. Justice Sadasiva Aiyar's interesting address.

Some Lessons from Experience.

In his report on the working of the co-operative societies in Bihar, Mr. W. H. Buchan, the Registrar, states that four and a half years' experience of co-operative societies, teaches a number of lessons. It teaches among other things a certain amount of caution—distrust of one's own and other people's enthusiasm in fact. Co-operation is "not a seed to be scattered broadcast and left to grow as it can." On the other hand, the same experience proves that a co-operative society, provided it is well formed and properly supervised, can be run by ordinary villagers with immense benefit to all concerned. "It can save the raiyat from the mahajan and give him a new outlook on life, it can make him thrifty, hard-working and self-reliant, it can improve agriculture, sanitation, and education, it can heal factions, and stop petty litigation, it can make village life healthier in all its relations. All these results I have myself seen. A net-work of societies would immensely facilitate general administration, for the principle goes to the very root of the matter. The instinct of association is already deeply implanted in the people and the co-operative movement which appeals primarily to this instinct has undoubtedly come to stay. But the process of unaided evolution is slow, and the stimulus judiciously applied can only do good." It is for this reason that Mr. Buchan holds that official as well as non-official help is needed. It is possible, he thinks, to go too far in endeavouring to avoid the danger of over-officialisation. Official organisation or inspection is to be deprecated no doubt, but it is most important that the District Officer should keep in touch with the movement in his district and exercise a

beneficial influence upon it. This is the view which is held by all who are interesting themselves in the co-operative movement.

Are We Helping the Poorer People ?

The following is a summary of a paper read by Mr. S. Satyamurthi Aiyar, B.A., B.L., at the Sixth Co-operators' Day of the Triplicane Urban Co-operative Society, Ltd., on the 13th April :—The Triplicane Urban Co-operative Society, although it has achieved splendid success in the extension of its operations, has not yet done anything to help the poorer people of Madras. From the available figures of its transactions, it appears that the society caters only to the needs of those who buy every month provisions from the stores worth Rs. 20 or Rs. 25.

On its distributive side, the society offers three distinct advantages :—

(1) So far as it can ensure, the articles offered by the society for sale are unadulterated and of good quality. The problem of supplying such goods to the population, especially the poorer classes of a city, is becoming increasingly difficult. And if it is to be satisfactorily solved in Madras, the society must bring within its fold the poorer classes.

(2) There is always a guarantee that the members of the society get their moneys' worth and hence there is no higgling. If the national defect of want of mutual trust, especially among the poorer classes, is to be removed at all, they must become members of the society.

(3) The transactions of the society being all in cash, the evil of indebtedness which is rife among the poorer classes can be mitigated only by their resorting to the society.

On its credit side, the two advantages or facilities for saving and cheap credit are likely to be much appreciated by the poorer classes, if they are made more accessible to them.

An economic survey of the conditions under which the poorer classes of Madras live and move and have their being is an essential condition of any satisfactory work in this direction. The society must make special efforts to make them members, supply them with the goods they want and in such quantities as they want, give them reasonable credit, if necessary, for the purchase of goods, open what are called "Penny Banks" in other countries, start chit funds of small amount, and do such other things as will develop in them sound habits of thrift and self-help. If the society does so in a truly missionary spirit, the day will certainly come nearer when "distribution shall undo excess, and each man have enough."

Agricultural Credit in Germany.

There has been published recently as a Blue book (Cd. 6626) a report to the Board of Agriculture on "An Enquiry into Agricultural Credit and Agricultural Co-operation in Germany, with some notes on German Live Stock Insurance," by Mr. J. R. Cahill. The volume, which extends to 226 pages is published at 5s.

In a prefatory note, Mr. Cahill explains that the report contains the results of an investigation he was commissioned by the Board of Agriculture to undertake, and is based essentially upon knowledge obtained by personal inquiry and upon the study of original documents.

In no modern State, he says, does organized effort for safe-guarding and promoting the economic interests of agriculture appear to have been so persistent and so successful as in Germany, more especially in the direction of providing the farmer with facilities for obtaining credit, for acquiring the instruments of production, and for disposing of his produce on the most favourable terms. In Germany, landowners can obtain mortgage loans through a variety of special institutions for mortgage credit ; the total outstanding loans obtained through such agencies at present being estimated at £400,000,000. The organization of institutional mortgage credit in that country has been greatly facilitated, Mr. Cahill says, by its complete system of registration of title and by the clearness of its mortgage law. Compulsory registration of title, as it exists in

Germany, Austria-Hungary, and Russia, or at least compulsory registration of deeds (as in France, Belgium, Holland, and other European countries, as well as in America and British India), appears an indispensable pre-requisite for the foundation of a system under which landowners may obtain mortgage credit on suitable terms by the creation of land bonds which would rank as first-class securities in the general market.

Mr. Cahill quotes a declaration of the late Prussian Minister of Finance, Herr von Miquel, made 17 years ago, to the effect that their goal must be to have a co-operative loan bank in practically every parish of the whole monarchy, and proceeds :—" That goal has now been nearly reached. There are in Germany 17,000 agricultural co-operative banks, with a total membership of over one and a half million. In 1910 the total turnover of 14,729 such banks amounted to £261,665,000, at the end of that year, the loans outstanding for fixed period, together with overdrafts, amounted to £93,034,000, while the savings deposits totalled £92,429,000, and the deposits on current account £10,865,000. The success and sound management of these societies are evidenced by the fact that in the 16 years 1895 to 1910 only 19 rural credit societies were involved in bankruptcy, a remarkable record when it is recollected that since 1901 there have been over 10,000 (and since 1909 over 15,000) societies of this kind in Germany. Comparing them with other banking and credit undertakings, one German writer of authority has computed that the frequency of bankruptcy per 10,000 of such undertakings over the period 1895—1905 was 55 times more frequent than with the credit societies.

"About 90 per cent. of these Raiffeisen banks are affiliated to central banks, which are organized according to Provinces or States. At the end of 1911 there were affiliated to 37 central banks, 17,668 societies of all kinds, of which 14,508 were credit societies ; and the total turnover of these central banks in that year amounted to £410,391,000. Since 1895 there has been in Prussia a central bank for the central banks, namely, the Prussian State Co-operative Central Bank. The State has endowed this bank with a total capital of £3,750,000.

" The great system of German rural co-operative credit as we now see it has not been created in a day, and it is hardly to be expected that the work of establishing a similar system would progress more rapidly in England. On the other hand, there seems to be no reason why it should progress more slowly in this country than in Germany, especially if a similar intensive and penetrating propaganda could be set in operation. Only through such local organizations would it seem possible to establish the close contact that must exist between lender and borrower if small farmers are to be in a position to obtain credit on suitable terms."

Mr. Cahill's general report gives a summary of the various forms of agricultural credit institutions in Germany, grouped under the main headings of " Mortgage (long-term) Credit " and " Personal (short-term) Credit." It deals also with the principal branches of agricultural co-operation, and closes with a summary of live stock insurance in Germany. All these matters are exhaustively treated in the report proper, and the value of the volume is increased by the bibliography, maps, and appendix which it contains.

Co-operative Agricultural Association.

Mr. K. Ramaswamy Aiyar, B.A.,B.L., an ardent co-operator in the Madura District writes in the *Madras Bulletin of Co-operation* as follows :—

If the co-operative movement is to take deep root in this country, existing societies should do something more than confine their work to credit banking. Unless agricultural co-operation is developed side by side with banking, the movement will not become a popular one. It is no doubt true that credit societies have been found to work well and have become exceedingly popular wherever established. Their chief attractions are that money is obtained by them at a cheaper rate

of interest than is available in the market, and that the terms of re-payment are easier and more advantageous to the ryots. The masses have very largely availed themselves of the cheap credit secured to them by becoming members of these institutions and many indebted ryots have escaped for good the clutches of the village sowkars and have also realised that money is more readily available to them than before for all useful purposes. To this extent the movement may be pronounced to be a success. How far it has helped the people to educate themselves educationally, materially, morally and socially is a thing well worth our consideration. In testing the progress of the movement we should not be guided merely by figures. The number of societies is undoubtedly very large, considering the short time during which they have sprung up. Their working capital and the profit earned by them are matters which should afford us the highest encouragement. But in the formation of character and cultivation of business habits among the members and in the formation of habits of self-help, thrift and a spirit of co-operation among the people generally our achivements are exceedingly insignificant. I attribute this to the present policy in the working of the movement. In the eyes of the people, every credit society is started by the Sirkar for the purpose of carrying on operations similar to those under the Agriculturists and Land Improvement Loans Act. They call the money Sirkar money. I have repeatedly heard them say that they must repay it promptly because it is Sirkar money. In most of the villages either the Karnam or the Village Munsiff is the secretary or president. Village officers have habitually the disposal of applications for loans. Loans to societies are sanctioned by a Special Deputy Collector or the Registrar in the same way as Government loans are sanctioned by Government officers. The place of the Revenue Inspector is taken by the Co-operative Inspector. In the face of these circumstances, no amount of persuasion is of avail in order to remove the impression that it is a Sirkar business or to convince them that the society is their own and that the credit they enjoy is due to their own combined efforts. I have even heard it said that money has become cheap now-a days and that the Sirkar are employing these methods in order to find suitable investment for their ever-increasing surplus funds. Such impressions have to be removed and our people have to be trained to habits of thrift and united action. This will be possible only if we can train them to co operate for the purpose of securing not only the money which is no doubt their first and most essential need, but other agricultural needs such as purchase of seed, manure, cattle food, &c. They have to be taught that if they can sell their produce collectively, holding it over till the proper season, they can have a much larger income than they now get. They must be made to meet and discuss the latest improvements recommended in the leaflets of the Agricultural Department in regard to methods of cultivation. The present credit institutions of our country are really so many agricultural associations. They have been formed mostly after the model of Raiffeisen banks of Germany. Mr. Wolff in his People's Banks has described "Raiffeisen" co-operation, as the first form of co-operation to reveal to the world the unlimited possibility contained in co-operative credit for promoting other forms of co-operation. "In the matter of co-operation whether for supply, distribution, production or common work, or whatever the object may be, before Raiffeisen credit developed, rural Germany was a barren waste. Credit came upon the scene and forthwith the soil brought forth flowers and fruits in abundance, showing the numbers and remarkable success of its agricultural co-operative organizations." "The moral results" have been described "to be even superior to the material. The banks trained their members to thrift and business habits." "Where formerly there used to be rivalry and jealousy, there is now fellow-feeling and cordial sympathy. Everybody has come to know by the liability resting on them that his neighbour's good coincides with his own, that his neighbour's hurt is also his own."

These words are highly encouraging to us; the future of our agriculture depends upon the successful working of our credit institutions. As in the case of the German Raiffeisen banks, our credit societies contain the germ for the development of other forms of co-operation. It is, therefore, not only needless, but a waste of energy and trouble, to have two separate institutions in the same locality, one for development of agriculture and the other for credit. The people who join a credit society for obtaining loans are also in need of the help and advice which an agricultural association can render. Our aim must therefore be to train the members of the credit societies gradually to develop agricultural co-operation also, but not to trouble ourselves for a long time to come about forming independent agricultural associations.

Novel Views about Co-operation.

The following are extracts from the Hon'ble Mr. Justice T. Sadasiva Aiyar's Presidential address at the Northern Sircars Co-operative Conference held at Tenali on the 26th April:—

When I was first asked to consent to preside over this Conference I refused in an almost unqualified manner, because I knew almost nothing of the origin, progress and working of the movement. But increasing pressure was brought to bear upon me and I am by no means a strong man; the strong language I occasionally tend to indulge in being probably more a sign of weakness than of strength. My hesitancy left me when I persuaded myself that this co-operative movement was closely connected with religion and I accepted your kind invitation ultimately.

Religious Point of View.

I shall put before you merely the religious point of viewing this movement. Religion, *i.e.*, that which binds creatures together, consists of two things. A lawyer once asked the Lord Jesus Christ "Master, which is the great commandment in the law?". The Lord said unto him "Thou shalt love the Lord thy God with all thy heart and with all thy soul and with all thy mind. This is the first and great commandment. And the second is like unto it. Thou shalt love thy neighbour as thyself. On these two commandments hang all the law." There is religion in a nutshell. The cultivation of all virtues and the rejection of all the vices are founded upon these two, love of God and love of His creatures. It is the feeling of love that makes us really co-operate with others. Then it is the feeling of hate that makes us dislocate from others. I admit that temporary co-operation might be brought about even bv selfishness. How much greater progress could self-conscious man make in the true religious spirit if he co-operates with others intelligently from altruistic motives! Now, gentlemen, I am going to enunciate some home truths which, however unpalatable, must be recognised. We, Indians, have got many virtues but also many defects. Of course, I am talking very generally. In the first place, we are wanting in stability. We have not got the doggedness of the Briton. Our enthusiasm effervesces like the gas in a soda-water bottle very soon after it manifests itself. Perseverance and determination we are wanting in. The next defect in our character is a "perpetual tendency to schism." We "are too intelligent and quick-minded." The critical faculty has been very much developed in the upper classes of our society owing to acute metaphysical subtleties in which cur mediæval forefathers indulged on philosophical subjects. We are also wanting (I must again say that I am speaking generally) in the qualities of bravery and fearlessness and when a man is not brave he is naturally not as truthful as he should be. All union and co-operation require discipline and as soon as the motive of fear is taken away from us, we lose all sense of discipline. There are only two motive powers in this world. One of them is Love and the other is Fear, which is a sub-division of the quality of hate, for perfect Love casteth out fear. Hatred of stronger men is fear. The man who is afraid is the man who hates. Now these co-operative societies

can flourish only on Love and not on fear or hate.

INFLUENCE ON CASTE SPIRIT.

This co-operative movement must modify and improve the caste-spirit as it now exists. I have felt great pleasure from seeing in the newspapers that the co-operative movement is getting the better of the caste-spirit as it now prevails. The members of the so-called high and the so-called low castes are working in a brotherly spirit in these co operative societies. Ignorance of one another is the greatest source of misunderstanding, contempt, and hatred. A close contact in a common noble work brings about better understanding and brotherliness between different castes, and thus this co operative movement is a great religious movement. In passing, I may remark that this co-operative movement has been singularly fortunate in the several heads who were appointed by the Government, to rule over it as Registrars. It may be said that because the primary object of the societies is connected with loans, money transactions and diminution of indebtedness and so on, it has more to do with Mammon than with God. But even Mammon can be made the servant of God. What is it that brought about this co-operative movement? It is the love of our benign Government for the welfare of the people. It is that same love which made Sir Frederick Nicholson sacrifice himself for the great work undertaken by him. It is that love and not the mere ordinary sense of duty which actuates ordinary Government officials, that made the Registrars appointed by Government to watch these co-operative societies, so enthusiastic and so hard-working in the promotion of this sacred cause. It is that self-sacrificing love which has produced non-official workers to promote the cause. So long as such impartial selfless love animates the Government, animates the officers who are placed from time to time at the head of this movement,and so long as selfless non-official workers continue to come forward to work in this sacred cause, so long will it continue to be really a religious institution promoting brotherhood among Indians

THE MOVEMENT HAS DANGERS.

I know that like all good movements, nay, like religion itself, the co-operative movement might become evil if it is used by evil men for evil purposes; thrift might be carried to the verge of stinginess and illiberality. A co-operative society consisting of members of a certain class alone might, when it becomes conscious of the strength derived from co-operation, try to use that strength despotically against other lower classes. Emulation between two co-operative societies might degenerate into rivalry and jealousy. The immense debt of gratitude we owe to the British Government and to numerous individuals among our British fellow-subjects might be forgotten. There are all these dangers in the co-operative movement but, as I said, as the foundation was laid in the love of our Government towards its Indian subjects without distinction of caste or colour and as for an indefinite period the prospects are that that same spirit of love and union irrespective of caste or creed will continue to animate the heads and leaders of this movement, there is no fear of its degenerating into mere worship of Mammon or into mutually jealous and selfish trade-guilds. Rather we see the glorious prospect of this movement aiding Indians to get rid of caste prejudices and sectarian and religious quarrels, of the evils of gambling in litigation which is going on to such a lamentable extent, of the reclamation of classes now given habitually to thieving and preying upon other classes of the community, of organised charity, of needed education in self-restraint and self-government. We see glorious visions of the revival of village panchayets, of village self-government, of the taking up of the problem of education and sanitation by the villagers under the general superintendence of Government officers, of the increase of loyalty and moderation in the consideration of public questions, of the spreading of sound views among the village public.

AN UNCHARITABLE ATTRIBUTION.

Some persons object that this co-operative

movement is only for a worldly purpose. Whether this co-operative movement is a good movement or a bad movement depends upon the motive with which it was started and is continued. If it was promoted by the Government with the object of promoting the happiness of its subjects and as a duty which the Government owes to the King of kings, then it is a religious movement and must lead to good. I have heard it recently said that the Government are now trying to put back the co-operative movement. Such uncharitable attribution of motive is, in my opinion, very immoral. The Hon'ble Sir John Atkinson very properly repudiated in a recent speech the calumny that Government wish to stop the growth of the societies from ulterior motives. He called the movement a most beneficial movement and he said that Government recognised the illimitable benefits that might proceed from the development of co-operative societies and that he hoped that socially, industrially, morally, economically, it might have the most beneficial effect upon the people of the country. Simply because the Government wants to hasten slowly, because they do not want to be guilty of hurried impatience, uncharitable motives are attributed to them. I do not want to talk politics here but as a religious man or at least a man who wants to put religion above everything, I must deprecate the promotion of disloyalty and want of charity. It was Government that took the lead in starting the movement and I am strongly of opinion that while Government should leave the societies as much internal freedom of management as possible, it should never sever its connection in the way of supervision, inspection and audit through its own officers. I respectfully venture to state, though I know the depth of my own ignorance, as regards the details of these matters, that the Government would do well not to give rise even to unreasonable suspicion by trying to relieve itself of the cost which it now incurs from Government funds for the necessary inspection and audit in connection with these co-operative societies. I am told that there is a proposal to throw the expense upon the societies themselves because the societies have increased in number. I would respectfully request the Government not to do so. I do not believe any non-official will object to have that cost borne by the general tax-payer. I just now quoted the opinion of the Hon'ble Sir J. Atkinson that socially and morally also, these co-operative societies are doing very beneficial work. Morally, I have read that the great vice of drunkenness is being attacked in some of the villages very successfully by some of the co-operative societies. A philanthropic gentleman of the British race spoke about this work somewhere, and he narrated how in one or two villages of the Salem District drunkenness was almost wiped out by the influence of the co-operative societies.

Local Option.

Whether rightly or wrongly, the Government is not just now inclined to allow the principle of local option in the matter of location of toddy and arrack shops. My esteemed friend, the Hon'ble Mr. P. S. Sivaswami Iyer, (if he was reported aright), spoke recently, as follows:—" With regard to the system of local option, to be tried tentatively, Government could not possibly agree to that proposal." Temperance reformers (of whom, gentlmen, I am one) believe that local option could remedy drunkenness. But Mr. P. S. Sivaswami Iyer felt very great doubt as to the soundness of that position. Gentlemen, if we could not get local option, why should not we try even the better remedy of bringing to bear the moral influence of these co-operative societies upon the drunkenness which is clearly increasing (though not in such an alarming degree as is represented by some temperance reformers) in this country. If some of you must injure the Government in some way, do it constitutionally, by making it lose more and more of the abkari revenue just as good men have made it lose the opium revenue. I believe that the Government will not ultimately be injured by losing more and more of the abkari revenue because, in my

opinion, it is absolutely certain that other heads of revenue will expand by improvement in the moral and economicial condition of the people as the abkari revenue goes down more and more. I do not at all share the fear of some gentlemen who hold (quite intelligently and quite honestly) the opinion that if the abkari revenue goes down it will be found impossible to obtain the money we all so urgently want for the expansion of education and irrigation and so on.

VILLAGE PANCHAYETS.

In my opinion, it is almost impossible to revive the village panchayet exactly on the old lines. But the spirit of it and the substance of it can be very well revived by the development and expansion of these co-operative credit societies. In the former village panchayets, members of the depressed classes could have had no place and very little influence, but we know that in these co-operative credit societies all classes and creeds have their place. If the village panchayets are revived exactly on the old lines it may only lead to caste tyranny and to partial judgments, and sectarian quarrels and other dying strifes might have opportunities to raise their hydra-heads again. But let these co-operative societies, guided by large-minded and large-hearted Government servants of Indian nationality like the three whom we have had the fortune to obtain till now, let such co-operative societies take the place of these village panchayets and I have no doubt that all the benefits of the old panchayet system can be again obtained without the evils which must inevitably follow if the old system be revived in its mere letter.

HASTENING SLOWLY.

I have already referred, gentlemen, to the necessity of hastening slowly. I know that about 600 applications which have been received for registration of new societies were pending recently before the Registrar and the Government. But I must repeat my fixed idea that the altruistic and religious spirit must be the foundation for the establishment of all these societies and I would deprecate the establishment of more societies unless the Registrar is satisfied that there are also in existence loyal altruistic non-official gentlemen who, with real unsectarian religious enthusiasm, would assist groups of such societies (such groups to consist of a manageable number of such societies) with their unselfish advice so that the societies might be saved from the pit-falls of too much worship of Mammon and from the danger of ungrateful, disloyal and irreverent extremism. That is why I deprecate the Government's grudging to bear the cost involved in the inspection and audit connected with these societies. Religious spirit and Government supervision must, in my opinion, be never dispensed with in any department of national life. This view of mine is not based upon any special conditions connected with India or the Indian people, but, in my opinion, it applies equally to all people on the face of the earth.

CONCLUSION.

Gentlemen, I am desirous like my friend Mr. Swamikannu Pillay that there should be an increase among us more of the true spirit of co-operation than a mere increase in the number of co-operative societies. That spirit is the spirit of a loving trust, of the different classes, creeds and races inhabiting this land, in one another. Let this loving spirit increase, let spiritual wealth thus grow and (as is said in the Bible) all other benefits including material benefits will be added by the Merciful Lord. Even the large material benefits clearly and beautifully summarized by my friend the Registrar, *viz.*—

(*a*) The multiplication of capital for beneficient uses.

(*b*) The enormous saving of the labour of the individual seller to find a purchaser and of the individual purchaser to find a seller.

(*c*) The making of large markets available even to men of small means.

(*d*) The automatic insurance against risks of illness, etc., and so on, all these benefits, great as they are, are less important than the growth of the co-operative spirit which is a highly spiritual virtue.

The majority, no doubt, will join this movement for the material benefit it confers on its members. But unless a succession of selfless enthusiasts continue to come forward (as they have come hitherto) to help, guide, and promote the spirit of brotherly co-operation in a religious spirit, the movement, like all great movements must become lifeless in the course of time or even mischievous through the loss of the divine fire.

The Industrial World.

A New Method of Indigo Dyeing.

MR. R. B Brown delivered an address recently before the members of the Manchester Section of the Society of Dyers and Colourists on "An Improved Indigo Vat for Cotton Yarn," in which he described a new method of indigo dyeing. The process, he said, consisted in setting the vat with very much less caustic soda than had hitherto been considered necessary for a hydrosulphite vat, and making an addition of common salt or Glauber salt. In a vat thus prepared the yarn was dyed, not as in the present method, in small vats and a few pounds at a time, but in lots of 50—100 lb., in ordinary dye-becks and in the same way as sulphur or vat dye stuffs. By giving one dip of 20-30 minutes duration in this vat, a shade might be produced as deep as that usually dyed in 3-4 dipped in a zinc-lime or copperas vat. A shade for which 6-7 dips were considered essential might be dyed with two dips only. Owing to the better penetration and fixation of the colour, the new method was considerably superior to the old as regards the fastness to rubbing and washing of the dyed yarn.

The Softening of Horn.

To soften horn, the bony core is first removed, the next process is to cut off with a saw the tip of the horn; that is, the whole of its solid part, which is used by cutlers for knife handles and sundry other purposes. The remainder of the horn is left entire, or is sawn across into lengths, according to the use to which it is destined. Next, it is immersed in boiling water for half an hour, by which it is softened, and while still hot is held in the flame of a coal or wood fire, taking care to bring the inside as well as the outside of the horn, if from an old animal, in contact with the blaze. It is kept there till it acquires the temperature of molten lead, or thereabout, and in consequence becomes very soft. In this state it is slit lengthwise by a strong pointed knife, like a pruning knife, and by means of two pairs of pincers, applied one to each edge of the slit, the cylinder is opened nearly flat. The degree of compression is regulated by the use to which the horn is to be put afterwards. When it is intended for leaves of lanterns, the pressure is to be sufficiently strong (in the language of the workmen) to break the grain, by which is meant separating in a slight degree the laminæ of which it is composed, so as to allow the round-pointed knife to be introduced between them, in order to effect a complete separation. For combs, the plates of horn should be pressed as little as possible, so that the teeth may not split at the points. They are shaped chiefly by means of rasps and scrapers of various forms, after having been roughed out by a hatchet or saw ; the teeth are cut by a double saw fixed in a back the two plates being set to different depths, so that the first cuts the teeth only half way down, and is followed by the other, which cuts the whole length ; the teeth are then finished and pointed by triangular rasps. Horn for knife handles is sawn into blanks, slit, pared and partially shaped, then heated in water and pressed between dies. It is afterwards scraped, buffed and polished.

Village Industries.

A writer in a recent number of the *World's Work* discusses the question of hand and machine labour and decidedly backs machinery as the eventual winner in the race. Discussing why village industries are languishing, the writer observes :—It is not necessary to labour the point about the insanitariness and cheerlessness of a great deal of old-time village labour. Nor of the appalling system of child labour. We may get along to the second reason why village industries have disappeared. They have disappeared because they have been unable to keep step with the times. The village shoemaker and the village builder go under,

because they lack the intelligence, the education, or the disposition to make progress. The world does not stand still even for village industries, and a good deal of what I may call the poetical advocacy of village industries is nothing more, nor less than a proposal to put back the hands of the clock. Incidentally, it is also, in not a few cases, a proposal for under-payment and dependency.

And further : It is not only a question of style and material but of price. But it is as bad in its way to pay too much for a thing as too little. The village shoemaker could only have made boots for our labourers by charging them more than they ought to be charged, and can be expected to pay *to-day*. The world outside our village has moved. Steam has been discovered and electricity, and all sorts of marvellous machinery has been invented. So there is no need to devote to the making of an essentially utilitarian article like a boot as much time as used to be necessary. The writer disposes of the controversy in these words : Many people who write and talk about village industries seem to postulate that machinery is of the devil. Of course it is nothing of the sort. How any one can imagine that there is a virtue in taking a week to do what a machine can equally well do in a few hours is a puzzle. We are speaking, of course, of what may be called the utilities of life. If the obscurantists had had their way, there would never have been even a saw-mill.

Industrial Census of Calcutta.

The statement of the principal concerns shows how largely the jute industry predominates, jute mills and presses furnishing employment to over 20,000 persons. Next in importance come printing presses, which are more numerous than any other kind of concern : the number of hands shown as employed in printing presses is swollen by the inclusion of those belonging to the Government of India Press, which was located in Calcutta at the time of the census. Other large concerns owned by Government are the Telegraph workshops with 847 workers and the Mint with 922. One new industry of growing importance is the repair of motor cars. Though motor cars have only recently been introduced, there were nearly 1,000 men employed in motor car works at the time of the census. It is interesting also to note that the Indians are no longer content to allow foreign countries to supply them with umbrellas and have started 14 works for their manufacture, in which 656 persons are employed.

Excluding the municipal concerns and works belonging to Government, and including both private and company owned concerns, there are 367 owned by Indians, 179 by Europeans and Anglo-Indians, 4 by members of both communites, and 7 by Chinese. Some branches of industry and manufacture are entirely or almost entirely monopolized by the Indian community, *e.g.*, they own all or nearly all the rope works, timber yards, type foundries, brass foundries, oil mills, soap factories, chemical works, flour mills, rice mills, sugar factories, umbrella manufactories, surki factories, etc. They also own the greater number of the iron foundries and iron and steel works, jute presses and printing presses and have a considerable interest in chemical works, but they have no share in such important concerns as jute mills, and very little in machinery and engineering works. The works belonging to the Chinese are all concerned either with carpentry and woodwork, or with the boot and shoe trade. Altogether 105,or over a sixth of the various undertakings, are controlled by companies, of which only seven have Indians as directors ; four more have boards, of which the directors are partly of Indian and partly of European or Anglo-Indian origin. The seven companies, of which the directors are entirely Indian, own 2 chemical works, 1 pencil factory, 1 cigarette factory, 1 bicycle factory and 2 printing presses. European companies own all the jute mills, all but one of the cotton mills, 10 jute presses and 12 machinery and engineering works,

Among private owners there are 360 Indians to 85 Europeans and Anglo-Indians. In other words, there are about four Indians to every one European or Anglo-Indian. The castes from which these private owners are mainly drawn are the Kayasthas (65), Brahmans (61), each of them accounting for about one-sixth of the total number, and then the Telis and Tilis (28) and Sadgops (26). The Kalus come next on the list having 20 oil presses, but no other works in their possession. Though the Sheikhs number over a quarter of a million, only 18 of them are found in the list of owners, or less than those shrewd and enterprising foreign merchants, the Marwaris (19). Of indigenous Bengali castes, the Baidyas claim 16 and the Chasi Kaibarttas 12, but the Subarnabaniks only 10 private owners: none of them is in this respect on the same level as the Sadgops.

In Calcutta and the suburbs 253,200 persons, or one-fourth of the population, are supported by industrial occupations and 190, 836 or nearly one-fifth by trade. Transport furnishes a means of livelihood to 126,330 or 12 per cent., while those who are maintained by the public administration and the liberal arts number only 3,000 less. Of those entered under the latter head 10,798 belong to the army and the police, or are dependent on soldiers and policemen, and 34,680 subsist by employment in the public administration; the remainder, who aggregate 56,075, have occupations connected with religion, the professions (such as law, medicine and education) letters, arts, and sciences. Domestic service accounts for no less than 117,763 or 11 per cent. of the inhabitants, while 161,601 come under the head of "insufficiently described occupations." Nearly half the latter are "Labourers and workmen otherwise unspecified," who correspond to general labourers. There are 39,036 persons or 4 per cent., who are dependent on pasture and agriculture, and 21,571 live on their income. The number of those who come under the category of unproductive occupations is 28,732, of whom 24,155 are beggars, vagrants and prostitutes.

Behar Industries.

In ancient times, India ranked very high as an industrial country and her manufactures found a ready market among the nations of the world. The ruins of her past greatness exist even now and some of her manufactures still survive in Behar, which though carried on by an untrained class at present, have a bright future only when taken up by better hands. It is a well-known fact that "the efficiency of an industry differs according to the class of men, who are the entrepreneurs." Their educaton, ability, keenness in discovering more economical methods and in regarding workmen according to their exact individual capacities are to be considered as important. The following industries of Behar deserve mention, according to a correspondent of the *Leader* :—

(1) *The Cotton Industries.*—The Behar sub-division and Bhagalpur are the two places where this industry is carried on in a very good way. The Julahas manufacture nice pagries and charkhanas which may be favourably compared with the best pieces of cloth turned out in any part of the country. These cloths are priced higher than those of foreign manufacture and this is a point against this industry. It has been noticed that the Julahas have the best aptitude to learn the new methods quickly and easily and a school is in existence in the town of Behar in which weaving is taught. For certain reasons, the school has not achieved appreciable success and is not very popular with the class for which it is intended. Saran produces nice *molia* cloth. It is of a fine quality and is best suited for quilts. In Purnea good *lungis* are prepared. This industry is carried on in these places on a small scale and though the quality is fine, the price is high and its sale is confined to the local market. Much capital has not been sunk in this industry and a crude method of production is still in vogue. The total output is quite insignificant when compared with the needs of the country. There are some signs of a revival but the future is not very promising. The Swadeshi movement has

opened a market for Bhagalpur Tassar in a distant place like Bombay. There has been a slight demand in the foreign market as well, as is indicated by its export.

(2) *Wool.*—Blankets are prepared in various places and those prepared in Behar and Bhagalpur excel by far. The Gareries of Behar are highly skilled and their blankets are rough and lack in softness. This industry requires better machines.

(3) *Fine Duries and Carpets*—are made in Patna, Gaya (Daudnagar), Sasseram and Mozaffarpur. This industry is found entirely in the hands of poorer men and for want of capital no improvement can be made.

(4) *Wooden Articles.*—Carpentry is in a flourishing condition throughout the province. It is highly paying and the efficiency of the carpenters is slightly better than those of the other provinces. This is due to the fact that Behar carpenters have introduced improved tools—Dinapur, Gaya and Monghyr are famous for wooden articles, the latter deserving of special mention. Monghyr produces fine ebony work which has a wide market throughout the whole of Bengal and Behar.

(5) *Pottery.*—Potters are reported for their skill. Mr. Keir Hardie who visited India some years ago spoke highly of this art in one of the Calcutta meetings. Sasseram and Siwan deserve special mention in this connection.

(6) *Stone Carving*—is also carried on at Gaya and Sasseram and silver and gold embroidery at Patna. But these suffer from a lack of patrons.

(7) *Glass Work*—Efficiently made at Patna. Kundis, Jhars, etc., are prepared.

(8) *Iron Works*—in the Behar sub-division and Monghyr also. Strong and beautiful boxes are made at Bhagalpur.

(9) *Sugar Industry.*—This is in an experimental stage in Behar. Behar produces cane in abundance. In Saran there is a great *gur*-mart. Some factories were also set up but with no success. This has a bright future if properly managed.

(10) *Tobacco*—in Gaya.

Thus we see that the resources of Behar are great and if properly worked up, they will be productive of great good.

Wood Pulp for Paper.

A recent issue of the "Cochin Gazette" contains a very important proceedings of the Dewan announcing the special concessions the Darbar is prepared to make to any private firm or company for making wood pulp. A similar announcement was made by the Dewan some time in 1910 but it seems that sufficient interest has not been aroused thereby. Since then, the Darbar has received expert opinion from London on the various specimens of wood forwarded and this opinion shows that there is ample scope on the West Coast for the pulp-making industry. There are various kinds of soft wood in the forests of which the different varieties of bamboos are pronounced to yield good pulp suitable for the manufacture of high class paper. The estimated cost for a ton of unbleached pulp comes to Rs. 76-11-0 which includes cost of bamboo, chemicals, fuel, labour and superintendence, depreciation, royalty, insurance, etc. Adding the freight to Calcutta, *viz.*, Rs. 7-8-0 the total comes to Rs. 85 in round figure, while the selling price of one ton of pulp in Calcutta is Rs. 147 which gives a clear margin for a profit of Rs. 62 per ton. With a capital of Rs. 8 lakhs on an average, 200 tons of pulp can be manufactured a week. According to a writer in the *West Coast Spectator* there is no question about the supply of sufficient quantity of bamboo. The forests are in a position to maintain three or four factories turning out 200 or 300 tons a day. The question is whether the Malayalees have sufficient pluck and energy to raise the required capital. If any of them are practical men, this is the time for them to come forward. Pulp-making can be made a special industry in Malabar and thousands of poor people can be saved from penury. The Cochin Darbar holds out sufficient encouragement to those who come forward and we may hope that the British Government also will not be found wanting in sympathy and encouragement. The following concession will be granted by the Cochin

Darbar to any enterprising firm or company which starts a factory at Chalakudy. (1) The land that may be required for the factory building free of assessment for a period of 12 years. (2) Supply of the necessary bamboo for actual felling and transport charges. (3) Supply of fuel for actual collection charge for 5 years. (4) Exemption from royalty for 5 years.

The Manufacture of Indelible Marking Inks.

Mr. F. D. Murad, M.Sc., writes in the *Indian Textile Journal* as follows :—

Manufacture of inks is a very extensive and fruitful pursuit. If the manufacturer knows something of chemistry, he can carry an excellent and flourishing business in ink-making on a large scale. He can devise special methods for the proper and harmonious mixture of the ingredients as well as experiment successfully upon original and cheaper receipts without, however, impairing the quality of inks. But the manufacturer of inks is not necessarily a full fledged chemist or a thorough scientist. Of course, it is much better if the manufacturer is, to some extent, well versed in the ordinary chemical processes and manipulations. It is thus that Stephen & Co., have amassed enormous fortunes through the success and popularity of a single receipt—known as Stephen's Inks.

The chief merits and the comparative facilities which the manufacture of ink offers to a beginner in the business are the simplicity of the manipulations and the actions involved along with a happy absence of all complicated pieces of apparatus and machinery which beset nearly all other trades. Again no very great amount of skill or dexterity is needed for success in this enterprise.

For the sake of illustrating what has been said above, I propose in the present paper to make a few remarks on the manufacture of a particular kind of ink.

An ink which leaves a permanent or ineffaceable impression after drying is called an *indelible*, or permanent ink. Such inks are very widely used for marking clothes, where it is important that the marks made before washing should not be obliterated by gas, steam or water-washing.

A great many attempts have been made by various experiments to produce an ink which would resist all attempts to remove it by chemical means. The object is to get an ink which shall sufficiently penetrate the paper, so that it may not be removed by chemical or mechanical means.

A cheap indelible ink may be manufactured thus : Add borax to boiling water, until a saturated solution is obtained. To this solution add as much brown gum-lac as will dissolve. To this mixture add some lamp-black. The proportions of borax, water, and gum-lac are naturally determined by the point of saturation. Lamp-black should be added in quantities sufficient to secure the desired degree of blackness. Ink thus made cannot be removed by chemicals, and presents a beautiful polish when written with.

Ordinary so called Indian ink is a preparation of carbon in a very fine state of division. Lamp-soot dissolved in hydrochloric acid or an aqueous solution of caustic soda, makes a satisfactory permanent ink.

A distinction is usually made between indelible inks and marking inks. The latter are chiefly used for writing on clothes, whereas the former may be used for writing in general.

Here is the receipt for one of the commonly used and valuable marking inks :

Silver Nitrate $AgNO_3$	$\frac{1}{4}$ oz.
Hot Distilled Water H_2O 7 fluid drachms	
Mucilage	$\frac{1}{4}$ oz.
Syrup of Buckthorn in sufficient quantity to give the desired coloration.	

The linen requires to be moistened with a 'preparation' previous to being written upon. The ink darkens in colour with lapse of time and may be diluted when very dark marks are not required.

Receipt for preparation:

Carbonate of soda	$1\frac{1}{2}$ oz.
Water	1 pint.

To be slightly coloured with a small quantity of sap-green.

The ink so made constitutes one type of the marking ink of the shops. Another type commonly used is the one without the preparation.

Receipt II for marking ink

Silver Nitrate	½ oz.
Water	1½
Strong liquor ammonia, sufficient to dissolve the precipitate formed on its addition.	
Mucilage	3fl. drachm.

A little finely powdered *indigo*, to colour.

Silver nitrate, used in both these receipts, is a comparatively dear commodity. Below is a cheaper receipt involving the mixture of two solutions—one of copper, and the other of aniline.

I. Receipt for Copper Solution.

Crystallised copper choride ...	8,52 grms.
Chlorate of Soda	10·65 „
Ammonium chloride	5·35 „

To be dissolved in 60 grams. of water.

II. Receipt for Aniline Solution.

Hydro-chlorate of Aniline ...	20 grams.
Distilled water	30 „
Gum-Arabic	20 „
Glycerine	10 „

By mixing in the cold four parts of the aniline solution with one part of the copper solution, a greenish liquid is obtained, which can be employed directly for the marking. It is, however, advisable to keep the two solutions separate, since the mixture can only be preserved for a few days. When the ink may be required for use, the two solutions should be mixed in the proper proportions. The ink can be used either with a pen, or a stencil-pencil and brush ; if it do not flow freely from the pen, it may be diluted with a little water, without fear of weakening the intensity of the colour. At first, the writing appears of a pale colour ; but after exposure it becomes black.

The following formula, due to M. Henry, is more susceptible of economy and capable of being manufactured on a very large scale.

Take one ounce of iron filings and 3 oz. of vinegar. Mix the filings with half the vinegar, and stir them briskly till the mixture becomes thick; then add the rest of the vinegar and 1 oz. water. Apply heat to accelerate the action, and when the whole of the iron is dissolved (the finer the filings, the better) add 3 oz. of sulphate of iron and 1 oz. of gum previously mixed with 4 oz. of water. Mix the whole with a gentle heat.

It should be borne in mind that the success of a trade in ink-making depends entirely upon the purity and cheapness of the ingredients used. The proper proportions, calculated to suit the taste of a fastidious public, can best be ascertained by experience. But no venture of this nature can score any success worthy of the name, unless the manufacturer thoroughly familiarises himself with the ingredients used, their nature, and how to obtain them pure. The numbers used here are meant as guides to show the proportion of different things and their absolute amount does, of course, depend upon the scale of preparation. A small start should be made.

Industries in Madras.

The following extract from the address of Dewan Bahadur P. Thiagaraya Chetti, B.A. as President of the South Indian Chamber of Commerce, sums up the industrial activity of Madras during the past year. He said :—

There has been nothing very noteworthy in the events of the past year. The Indian Companies Act which has just been passed into law is a measure of great commercial importance, and since the Act, as finally passed, has not yet been published, it is rather difficult, to-day, to state the exact scope of the most important provisions of this measure. Last year, at the annual meeting, I made a passing reference to our industries and incidentally called attention to the picture of the industrial condition of this Presidency as drawn by Mr. Chatterton in the Census Report. Mr. Chatterton has since left us, and what is our loss is the gain of Mysore. His account of the industries of the Presidency has been recently reviewed by Government, and the

following remarks thereon are noteworthy :— "With the exception of a few cotton and jute mills, sugar factories and cement works, the Madras Presidency possesses no primary industries organised on modern lines and such secondary industries as exist are conducted under primitive conditions. The absence of mineral wealth, especially coal, largely contributes to this backwardness, but, as observed by Mr. Chatterton, the complete dissociation of the intellectual classes in the country from its industries is largely responsible." The dissociation of the monied classes will also have to be taken into account. The large incomes of those who pursue the learned professions are seldom made available for the advancement of trade and industries. It is not alone the capital and enterprise that is lacking. There is no art, technical, industrial, commercial or even agricultural education of a useful kind imparted in any systematic manner. Not five per cent. of the total population pursue industrial occupations. Nearly all the so-called commercial schools in this Presidency teach only Typewriting and impart instruction in a very few cases in the bare rudiments of Book-keeping and Commercial Correspondence. But for the Chengalroya Naicker's Technical School and the Madras and Vellore Anjumans, there will be hardly anything worth mentioning under Technical Education. Thus, in point of intellectual and manual training and equipment as well, there is a great backwardness. While fully recognising the need for co-operation and self-help, I cannot avoid blaming Government, to a certain extent, of indifference and inattention to the industrial needs of the people.

THE DEPARTMENT OF INDUSTRIES.

It will be remembered that following the Ootacamund Industrial Conference of 1908, the Department of Industries was started in 1909. The organisation evoked much enthusiasm, and just when high hopes came to be entertained of its usefulness, by reason of an interested and influential agitation, the Department came to be abolished in 1911. It will also be remembered that the decision of the Secretary of State abolishing the Department was the subject of considerable opposition. In the Madras Legislative Council, in February 1911, the Hon'ble Mr. T. V. Seshagiri Iyer moved a Resolution requesting the Secretary of State for India to reconsider his decision and to accord his sanction to the proposals of the Ootacamund Conference as approved by the Madras Government and the Government of India. I had the honour of seconding this Resolution, and a lengthy Memorandum prepared by this Chamber on the subject was placed before the Council, at my speech on the occasion. This Resolution was carried by an overwhelming majority of 21 against 3, and the then President of the Council, Sir Arthur Lawley, assured the Council that the Government were quite prepared to give effect to the Resolution. He observed that there was no necessity to test the feelings of Government in the matter and added: "We are quite prepared to address the Secretary of State and to invite him to a reconsideration of the decision at which he has arrived." Two years have elapsed, and nothing has been heard of this matter.

THE APPOINTMENT OF EXPERTS.

The Secretary of State in his Despatch sanctioned the appointment of (*a*) a dyeing expert, (*b*) a weaving expert and (*c*) a leather expert for instructional purposes only, and the Despatch concluded with an undertaking to select and engage the dyeing and leather experts on suitable salaries, leaving the weaving expert to be recruited in India. The Government of Madras issued their orders based on this Despatch in October 1910, in the course of which it was observed that orders would issue in the Educational Department regarding the details connected with the employment of the dyeing and the leather experts and also as regards the retention of the services of the weaving expert who had already been appointed by them. Orders regarding the establishment of a Bureau of Industrial Information were also promised. This was in October 1910. The tinctorial expert had come into being by March 1911 and he began by

studying the conditions under which the dyeing industry was being carried on in the Presidency and he was required to consider and report on the question of establishing a school for dyers with an adequately equipped tinctorial laboratory. His report embodying detailed proposals was submitted by August 1911. The leather expert also appeared about this time, and he too went about collecting information regarding the establishment of the proposed Leather School. Presumably, his report also embodying his proposals was submitted more or less about this time. For the last 18 months, the Government of Madras have been considering the proposals of these two experts, apparently without coming to a decision yet. The tinctorial expert has been teaching two or three pupils at Madura and giving them informally such instruction as he chooses. But the leather expert could not do even this, in the absence of a place where he could undertake teaching of any kind. In fairness to them, however, I must say that there has been nothing wanting on their part. As regards weaving, an officer was placed on special duty to report on fly-shuttle looms at work in the Presidency and in May last his report was published. Encouraged by the satisfactory increase in the popularity of the fly-shuttle slays, Mr. Chatterton made several suggestions for the improvement of the condition of the weavers and the Government invited detailed proposals for the exhibition of a Warping mill, and the organisation of a peripatetic instruction party to demonstrate to weavers the advantages of improved methods of work and appliances. The Warping Mill is yet to be exhibited and the proposed peripatetic party is yet to start. The Bureau of Industrial Information is yet to be established. Proposals were also called for, for affording special facilities for the education of the sons of weavers, and when these proposals do come it is difficult to say how long they will be under consideration. The only satisfactory feature is the work of the Pumping and Boring Department. The Director of Pumping and Boring Operations reported last year a steady development of the work of the Department in all directions and an active demand for mechanical appliances. This progress has been well maintained during the past year. Over a hundred installations have been put down during the year, and the number of Industrial and Irrigation plants has been almost equal. The number of private installations during the year is not known, but there is reason to believe that this number is also on the increase. The ryots' cost of the installations put down through the Department during the year exceeded Rs. $2\frac{1}{2}$ lakhs, as against a lakh and a half in the past year. About 22 loans of the value of over Rs. 52,600 were sanctioned during the year under the Land Improvements Loans Act as against 14 loans of the value of Rs. 36,500 in the previous year. However satisfactory this progress may be, considering the enormous agricultural population and the vast extent of the field for employment of mechanical appliances, we can hardly congratulate ourselves on what has been done, or on the rate at which it has been done.

Thus in regard to industries, there is a leisurely way of doing things, which would argue that if the Government are not actually unwilling to move, they are apparently indifferent and inactive. The Department of Industries is in a state of suspended animation. The proposals that have been made have been hung up. The officers are marking time and the Secretary of State has perhaps shelved the whole question. Last year I concluded my speech with two quotations from the speeches of His Majesty the King-Emperor while in India. Replying to the address of the Calcutta Corporation, His Gracious Majesty was pleased to observe : "I know that you cherish ambitions that India will one day become a great manufacturing as well as an agricultural country. I have watched with keen interest the progress of your business enterprises, and I trust that the success which has attended your commercial energy will attract more and more the youth of this country to regard commerce as a distinguished profession." In another connection, His Majesty added. "It is my wish that there may be spread over the land a network of schools and colleges from which will go forth loyal and manly and useful citizens able to hold their own in industries and agriculture and all the vocations of life." The course of events, at all events, in this Presidency, does not augur well for the realisation of this noble wish and great hope of His Majesty.

The Commercial World.

Commercial Enterprise in India.

THE commercial enterprise of India in the months of January and February 1913 is shown by the following abstract of companies registered in the two months :—

	January.	Rs.
4	Banking and Loan Companies ..	12,19,600
4	Insurance Companies ...	1,65,000
1	Railway Company ...	50,00,000
1	Printing Company ...	25,000
10	Trading Companies (other than those specified above) ...	8,71,250
3	Cotton Mills Companies ...	16,25.000
1	Rice Mills Company ..	50,000
2	Tea Companies ...	8,00,000
1	Planting Company (other than specified above) ...	75,000
2	Coal Mining Companies ...	2,50,000
29	Grand Total	1,00,80,850

	February.	Rs.
1	Banking and Loan Company...	10,00,000
5	Insurance Companies ...	1,00.80,000
7	Trading Companies ...	10,60,000
3	Cotton Mills Companies ..	1,05,04,000
1	Tea Planting Company ...	2,00,000
2	Mining and Quarrying Companies	22,00,000
19	Grand Total	2,50,44,000

The Late Pierpont Morgan.

The death is announced of Mr. Pierpont Morgan, the great financier. He was one of those men to whom America owes some of her "biggest things," but his dealings were by no means restricted to the States. He was for instance a member of the banking firms of J. P. Morgan & Co., New York ; Drexel & Co., Philadelphia ; Morgan, Grenfell & Co., London ; and Morgan, Harjes & Co., Paris, so that his activities may reasonably be described as almost world-wide. Of recent years he has been most prominent in the re-organisation of railway and other interests. In 1897 he amalgamated the five great lines that were the Trunk routes between Buffalo and New York, by virtue of his immense financial resources and organising power. He undertook the revivification of other business while he had a great share in the formation of the Steel Trust with its capital of £229,000,000. Whether his manipulations have proved for the best for the country in the long run is yet undecided; and the rulings of the courts apparently indicate otherwise. After bringing the Southern Pacific Railways into working association in 1901, Mr. Morgan "captured" the Leyland and Atlantic transport fleets. He was also the principal negotiator of the Bond Issues of the Cleveland administration. He was born in 1837.

Railway Expert Investigation.

In the agitation against the management of Indian Railways, the Railway Board has come in for a good deal of criticism and the suggestion has also been made that an expert committee should be appointed to examine the whole question of railway finance and administration. This has been urged in a memorial of the Indian Mining Association, and by the Bengal Chamber of Commerce and the East India Section of the London Chamber of Commerce. The suggestion has also been supported by the Press. Thus the *Indian and Eastern Engineer* writes :—"We are in complete accord with the memorial which the Indian Mining Association has recently submitted to the Government of Bengal for transmission to the India Office. This was delayed pending the publication of the report of the Coal Traffic Conference, and there is no question that the proceedings of the latter have greatly strengthened the hands of the Association and given support to its action. The memorial indicates very clearly the evils inflicted on the trade of India by the deficiencies of the railway system, and points out that "it would be easily possible to collect

an overwhelming mass of evidence to show that almost all the principal Indian railways have been, during the past twelve months, hopelessly unequal to the requirements of the traffic." The memorial quite fitly directs attention, not for the first time, to the failure of the Government to provide the £12,500,000 which the Committee on Railway Finance, presided over by the present Lord Inchcape, recommended, should be expended annually on the railways. It suggests that an exhaustive expert enquiry should now be instituted, with a view of ascertaining the amount of capital required under existing conditions, and proposes that the Railway Board should be strengthened by the assistance of experts in traffic working, bridge construction, locomotives, stores management and the design of station yards on modern principles to facilitate the rapid disposal of rolling-stock. Whatever the fate of this memorial, there can be no question that recent demonstrations on the part of the commercial interests of the country have already had the much desired effect upon the powers that be, and that the outlook for the efficient working and development of Indian railways is brighter to-day than has been the case for many years."

In this connection, it is well to explain the position of the Railway Board as considerable misconception appears to exist on this point. In the memorial of the Indian Mining Association, reference is made to the gigantic task of the Railway Board in managing and controlling all the railways in India. The Railway Board, says Sir T. R. Wynne, is not responsible for the provision of capital funds. It is liable to be overruled in the amount it considers should be provided for working expenses in order to enable railways to be worked efficiently and for the provision of works debitable wholly or partly to revenue. "In times of dull trade and when railway receipts do not come up to the budget anticipation, they are accused of extravagance. Time passes, trade improves and the Railway Board are blamed for more money not having been spent in the past, so that the railways might have been in a better condition to deal with the growth of traffic. What the Railway Board has done is to plod steadily along with the settled policy of improving the carrying capacity of the railways as far as the means placed at their disposal permitted."

On the question of expert enquiry, the Hon. Mr. Clark observes :—

"It is not enough to have plenty of money to spend; we must be sure that it is being spent in the right way and that the existing railway facilities are being utilised to the best advantage. It was this consideration no doubt which led the Bengal Chamber of Commerce and the East India Committee of the London Chamber of Commerce to press for an outside expert enquiry into our railways. Government have very carefully considered this suggestion, but on the whole, its adoption in the present circumstances has appeared to them inadvisable. I need not give our reasons in detail, but broadly what has influenced us is that such an enquiry would inevitably take a very long time ; it would *ex hypothesi* be conducted by a person or persons unfamiliar with special conditions and difficulties of Indian railway administration, which has dangers of its own ; and as there is no reason to suppose that the different railway administrations and the Railway Boards are not fully cognisant of the immediate improvements required, insufficient grounds would seem to exist for risking these disadvantages. I think anyone who studies the detailed lists of works included in the Programme for the next three years, will be satisfied that the needs of our railways are well understood and are being met. At the same time we are very far from wishing to debar ourselves from the advantage which may be reaped from experience in other lands. In a country such as India, cut off from actual railway contact with other countries, it would be always possible that our methods might be getting rusty; besides every country has something to learn from another in railway matters, and it is of great value to see how difficulties have been surmounted or at least grappled with by other nations, whose

railway problems are in some respects similar to our own. What has seemed to us the best policy is from time to time to send our own men, who of course are thoroughly conversant with Indian conditions, to study special methods in other countries and to examine how far they might be applicable in India; and to combine this with bringing over to India foreign experts to help us in specific cases and for specific purposes. We thus avoid the delay inseparable from a large enquiry; and we avoid the risk of having forced upon Indian railways methods not suited to their circumstances. In pursuance of this policy, Major Cameron of the North-Western Railway was sent early last year to Canada and America to study the possibility of introducing on Indian Railways the A. B. C. despatch system which has been specially devised to meet the requirements of traffic over long leads of single line—a very familiar condition in India. If, in the light of Major Cameron's report, this system which, I understand, has been amazingly successful in increasing the carrying capacity of American and Canadian lines, is found likely to prove workable in India, we shall endeavour probably to obtain the services of American or Canadian experts in introducing it experimentally on one of the State-worked railways. Similarly advantage has recently been taken of Mr. Merz, the well-known expert in electrification, being in the East, to obtain reports from him on the possibilities of electrification for suburban traffic on the G.I.P., and B.B., and C.I. Railways at Bombay and on the E.B.S. Railway at Calcutta. The use of electrical power has played a very important part lately in Western countries in expediting local traffic and preventing congestion in the neighbourhood of large terminal stations, and it has been well worth our while to obtain expert opinion to most crowded areas. It is on these lines rather than by a general, and therefore perhaps rather diffuse inquiry, that Government think outside experience can be most practically and usefully applied to our railways. The two instances I have given are fraught with very far-reaching possibilities and the Railway Board have under consideration whether action of a similar kind might not advantageously be taken in other directions. In the meantime, as the Council is aware, Sir Henry Burt has been appointed temporarily as an additional member of the Railway Board solely to investigate on the spot, causes of congestion, and to advise what steps might be taken to bring about some immediate relief; and I think the commercial representatives here in Council will agree that he has already achieved very valuable results in the areas which he has visited.

I have not attempted to discuss comprehensively the whole problem of congestion on Indian Railways, a task which would involve far too large a draft on the time of the Council. I have merely endeavoured briefly to explain the principles on which we are grappling with it. Let me conclude by summarising them. As a purely temporary measure, Government have placed one of their most capable railway officers on special duty in order to assist and advise railway administrations in congested areas. Their policy for the future is to continue to devote to open lines, until they have reached the necessary standard of efficiency, the lion's share of the annual capital grants. They are endeavouring to effect arrangements which will facilitate the expenditure within the year of the allotted grants and avoid the lapses which have been a too frequent characteristic of our railway finance in the past. Lastly, as I think I have shown, they are not neglecting the problem of how the grants may best be spent and how India may best benefit by the experience gained by men responsible for the management of railways in other lands."

We trust the above assurances from the Government will satisfy the European Commercial public and they will be less insistent upon spending more money on new ventures of doubtful value. The problem of Railway finance is noticed in the 'Financial World' of this issue.

Foreign Trade of Japan.

In his speech in the Imperial Legislative Council which we print elsewhere in the 'Economic World' Sir Guy Fleetwood Wilson

refers to the possible formidable rivalry of Japan in the commercial progress of India in the years to come. Particulars of the foreign trade of Japan will therefore be of great interest to our readers.

IMPORTS.

Years.	Footstuffs.	Raw materials.	Half manufactured goods.	Manufactured goods.	All other.	Total.
	$	$	$	$	$	$
1882 ...	2,735,000	555,000	4,494,000	6,230,000	650,000	14,664,000
1887 ...	3,934,000	1,136,000	6,693,000	9,503,000	797,000	22,063,000
1892 ...	8,012,000	7,437,000	7,513,000	11,734,000	824,000	35,520,000
1897 ..	26,620,000	26,675,000	18,143,000	36,520,000	1,253,000	109,211,000
1900 ...	25,939,000	40,116,000	28,913,000	45,954,000	2,134,000	143,056,000
1901 ...	29,826,000	41,451,000	19,607,000	34,718,000	1,794,000	127,396,000
1902 ...	24,496,000	52,247,000	19,603,000	37,019,000	1,957,000	135,322,000
1903 ...	51,562,000	48,761,080	21,418,000	33,928,000	2,234,000	157,933,000
1904 ...	55,885,000	57,454,000	25,204,000	43,813,000	2,581,000	184,937,000
1905 ...	48,335,000	79,644,000	46,081,000	65,239,000	3,994,000	243,291,000
1906 ...	39,494,000	67,417,000	38,390,000	59,387,000	3,916,000	208,554,000
1907 ...	39,171,000	93,465,000	46,317,000	66,227,000	1,064,000	246,244,000
1908 ...	34,003,000	76,407,000	41,837,000	63,309,000	1,699,000	217,255,000
1909 ...	25,598,000	84,264,000	35,732,000	49,531,000	1,186,000	196,311,000
1910 ...	22,404,000	115,211,000	41,261,000	51,052,000	1,260,000	231,188,000
1911 ...	25,709,000	115,393,000	50,002,000	62,927,000	1,844,000	255,875,000

EXPORTS.

Years.	Foodstuffs.	Raw materials.	Half manufactured goods.	Manufactured goods.	All other.	Total.
	$	$	$	$	$	$
1882	5,682,000	2,262,000	9,276,000	1,238,000	327,000	18,785,000
1887 ...	6,858,000	2,812,000	11,891,000	3,505,000	1,033,000	26,099,000
1892 ...	83,19,000	4,591,000	22,012,000	8,884,000	1,563,000	45,369,000
1897 ...	10,469,000	8,407,000	41,304,000	18,708,000	2,353,000	81,241,000
1900 ...	11,311,000	13,869,000	44,599,000	28,327,000	3,706,000	101,806,000
1901 ...	14,877,000	12,472,000	60,730,000	34,303,000	3,288,000	125,670,000
1902 ...	15,484,000	13,116,000	59,910,000	37,335,000	2,792,000	128,637,000
1903 ...	17,211,000	15,181,000	68,113,000	40,254,000	3,412,000	144,171,000
1904 ...	18,601,000	12,767,000	74,405,000	49,509,000	3,709,000	158,991,000
1905 ...	21,512,000	13,687,000	67,651,000	51,299,000	5,974,000	160,123,000
1906 ...	25,347,000	16,994,000	93,390,000	67,039,000	8,260,000	211,030,000
1907 ...	22,258,000	21,757,000	99,066,000	70,843,000	1,417,000	215,341,000
1908 ...	20,407,000	20,567,000	84,851,000	60,422,000	2,119,000	188,366,000
1909 ...	24,167,000	18,377,000	100,055,000	61,041,000	2,090,000	205,730,000
1910 ...	25,640,000	20,011,000	112,066,000	68,391,000	2,189,000	228,297,000
1911 ...	25,939,000	19,946,000	106,069,000	68,371,000	2,497,000	222,822,000

The above table showing Japan's foreign trade for the past 30 years, is taken from statistics compiled by the Department of Finance, Tokyo. It is interesting, says a United States Consular Report, as showing the development of Japan as a manufacturing country, as evidenced by the growth of the export of manufactured goods, which rose from the small proportion of 6 6 per cent. in 1882 to 32·9 per cent. in 1907, though for 1911 the percentage somewhat decreased. Goods partly manufactured, which include raw silk, the most important export item, have maintained a fairly steady percentage, averaging 45·86 per cent. of the total during the 30 years. The percentage of foodstuffs exports has decreased considerably since the eighties, and raw materials, which formerly ran as high as 12 to 14 per cent., dropped to less than 10 per cent. of the total in the past few years.

The import figures are still more significant. In 1882 the proportion of manufactured goods imported was 42·49 per cent. and that of half-manufactured goods 30·64 per cent., or 73·13 per cent. of the whole, against only 3·79 per cent. of raw materials. By 1891 the proportions were, respectively, 36·13 per cent., 20·77 per cent., and 15·86 per cent., and in 1901 they were 27·25 per cent., 15·39 per cent., and 32·54 per cent., while in 1910 and 1911 the import of raw material exceeded the total import of goods manufactured or partly manufactured and reached the proportion of 45·10 per cent., or nearly half of the entire import.

The importation of foodstuffs reached its highest percentage in 1898, comprising over a third of the total, and again in 1903 and 1904 the importation was high on account of preparations for the Russo-Japanese war, while present indications point to an average importation of less than 15 per cent.

We may add that the foreign trade of Japan for the year 1912 totalled Yen 524,711,000 exports and Yen 618,694,000 imports, in all Yen 1,143,405,000, which is a record. These figures show an increase of Yen 182,167,000 on the grand total, and of Yen 77,278,000 in exports and of Yen 104,889,000 in imports. The excess of exports over imports was Yen 93,983,000 or an increase of Yen 27,612,000 over the excess in 1911. The excess export of bullion, gold and silver, was Yen 16,783,000. The principal increases in exports were :– Raw silk, Yen 19,000,000 ; cotton yarns, Yen 12,000,000; hat braids, Yen 10,000,000. The headings cotton tissues, waste silk, copper, coal, underwear, matches, habutaye, rice, tea, timber, camphor, and umbrellas all show decrease. In imports, raw cotton, iron, rice, wheat, sugar, wool, machines, hemp, fertilisers, and paper were the principal increases.

Commercial Advertising.

The buyer in India as everywhere else in the world is always anxious to buy things cheap. The seller in this country has quite realised this and cutting down his expenditure to bring down the cost price of his wares, he lays violent hands on the advertisement budget. His aim is to attract customers by cheapness but how in the world are his customers to know that his goods are cheap unless he lets them know that they are so! Again in the case of certain classes of goods which appeal to the rich, it is not cheapness alone that induces the customer to buy. Patriotism, fashion, novelty, all these are factors that often determine the purchase of an article. The principles and benefits of advertising are so little understood by Indian businessmen that it is desirable that they should know how businessmen in the advanced commercial countries push on their business. Take for instance England. The growth of commercial advertising in this country has been phenomenal.

Mr. B. S. Uberoi of the well-known Uberoi family of Sialkot writing to the *Punjabee* from London points out that the first thing which strikes the visitor to England is the magnitude and variety of appeals made for his patronage. In other words, his attention is absorbed by the multitudes of advertisements which at every turn meet his eyes. The visitor to London cannot fail to be amazed at this impressive sight. On the buildings and in the streets, along the Railways and in the

trains, in the newspapers and walls—it is simply advertising everywhere.

This is the condition of English advertising to-day ; 50 years ago it was very different and had not reached half its present proportions. This remarkable growth may be attributed to several causes. Firstly, as publicity became more popular, continually increasing in volume, it behoved advertisers generally to make larger displays, until to-day it is necessary to spend £10,000 to obtain the results £5,000 did a generation since. Then, the advent of huge joint stock companies witnessed tremendous developments, for the greater the undertaking the more powerful must the advertising be. Further, the knowledge of publicity's power is now so far-reaching that no large firm hesitates to sink huge sums in advertising. Whereas, as in years gone by, anyone with something fresh to sell was accustomed to merely dabble in publicity, newcomers to-day profit by the experience of others and seek every opportunity of exploiting this most powerful method of attracting the public.

The greatest example ever made in this direction was provided by the stupendous campaign conducted by Messrs. Selfridges in 1907 when opening their gigantic departmental stores in London. Selfridges were practically unknown before their advertising commenced but within a fortnight they not only made their name a household word but also created a goodwill which at once rivalled to that of their competitors who had been established over half a century. That memorable " Storm of London " consisting of daily whole pages in every serviceable newspaper in the kingdom cost something like £10,000, and simultaneously with the appearance of Selfridges' irresistible announcements, their spacious building was beseiged from basement to roof with eager shoppers, and for many days Selfridges looked like the axis about which whole London seemed to revolve.

Thus was Selfridges' established successfully through sheer force of advertising personally planned and directed by Mr. Selfridge. Mr. Selfridge, who has been referred to as the most broad-minded advertiser in England, once said to the late Mr. W. T. Stead :—

" London is the hub of the world in business and I am trying to make Selfridges' the hub of London." Since its principal made that statement, Messrs. Selfridges have achieved great things, due solely to strenuous, judicious, persistent advertising. In short, at present, you cannot think of London without thinking of Selfridges and this despite the existence of such world-wide famous firms as, Harrods, Whiteley's, Gomages, Pontings, Barkers, etc. Selfridges' form of advertising —quite new to England—was at once approved and adopted and it has been often declared by the Technical Press that their first series of cartoons announcing the inaugural ceremony were reproduced all the world over. As may be imagined, these rivals continually battle for supremacy and a glance through the London papers at any time will indicate that huge amounts are devoted to this struggle. The annual cost of third class advertising is over a million.

But this is confined mostly to London. Let us turn to National Advertisers. Here we find advertisers, who, besides extensive press advertising, set aside a vast appropriation for Bill Posting and other out-door publicity work. There is scarcely a place in England where cannot be seen the homely name of Pears, Sunlight, Cadbury, Rowntree, Bovril, Oxo, Beecham's Pills, Grape Nuts, Zam Buk, Quakers Oats and a host of others.

Many of these firms have turned Art to profitable use and it is undoubtedly due to them that the hoardings have been termed, " the poor man's picture gallery." Messrs. Pears' appreciation of Art in advertising was demonstrated by the fact that they paid £2,200 for John Millais' beautiful picture, " Bubbles." The amount expended since on this masterpiece (which was afterwards adopted as a Trade-Mark by the firm) totals many thousands but is insignificant when compared with the £3,000,000 which Pears have spent in advertising since 1789 when Andrew Pears

started making his speciality. At the present time they are spending over £100,000 yearly.

By far the greatest soap-makers are Messrs. Lever Brothers, the proprietors of Sunlight, Lifebuoy, Monkey Brand, Lux, Vim, Plantol, and Velvet Brands. This remarkable company commenced only 30 years ago in a very small way but by dint of forceful and artistic advertising a wonderful business has been built up. One of the outstanding events in the history of this firm was the founding of Port Sunlight near Liverpool, covering 220 acres. This is now a thriving town where over 70 different trades and occupations are carried on. The principal, at one time a poor unheard, unspoken, Mr. Lever, is now seen in Sir William Hesketh Lever, M.P., a power both in business and politics.

Another consistently and cleverly advertised commodity is Beecham's Pills. These announcements are conspicuous for their novelty and it is well-known that a fortune has been made by the phrase : "Worth a guinea a box."

The enormous sale of "Turog" Bread was created by advertising in 2 years, 1905-7, while the Grape Nuts Co., which started in a little white barn in 1895 can now afford an annual advertising Bill of £150,000.

Perhaps the most instructive instance of how advertising at once reflects back in the shape of increased returns is shown in the following figures relating to Mazawatte Tea :—

	Duty Paid.	Representing.
April 1898 ...	£63,147-2-10	3,779,365 lbs.
January 1900	£85,862-8-8	5,138,899 lbs.

The above include only a few of England's biggest advertisers. So complete and extensive is advertising in England that on some railway stations it is almost impossible to distinguish the name of the place. Speaking of railways it is worth mentioning that the London Underground system derives a yearly revenue of £100,000 from advertisements alone. No one can possibly realize without seeing for himself the indescribable dimensions English advertising has reached.

Some idea may be gained from the appended figures selected at random :—

	Estimated Annual Expenditure. £
Lever Bros.	150,000
Rowntree's Cocoa	130,000
Cadbury's Cocoa	130,000
"Johnnie Walker"	100,000
Bovril	100,000
Pears	100,000
Dewars	80,000
Oxo	80,000
Beecham's Pills	80,000
Zam Buk	40,000
Selfridges	40,000
Harrods	40,000

English advertising is very costly. But here again is emphasised the vastness of English publicity, for as in other things the greater the demand the higher the charges. Then it must also be remembered that as advertising has grown, so have the press and other facilities expanded and improved. Years ago a newspaper with a circulation of 30,000 was a rarity but to-day in England there are several journals each read by a million people.

In this connection the following short list will be of interest :—

	Cost of whole page per insertion. £	Approximate Circulation.
Daily Mail ...	300 ...	1,000,000
Daily Telegraph ...	160 ...	200,000
Times	180 ...	200,000
Morning Post ...	158 ...	150,000
News of the World (wky)	400 ...	2,000,000
Lloyds Weekly News	300 ...	1,450,000

Of all newspapers, the "Daily Mail" is used mostly by advertisers. The average amount of space occupied by advertisements is about two thirds of the paper.

Another side-light on the growth of English advertising is given by the 300 odd advertising contractors who make a living out of publicity in England. 5/6 of this number operate in London and there are as many as 300 Bill Post-firms in the United Kingdom.

Whether the number of Agents will grow further is rendered doubtful by the appearance of the advertising consultant. Several of the latter are now to be found in London and so quickly have they sprung up that an organisation now flourishes under the title of "The Incorporated Society of Advertisement Consultants." This very powerful body is under the able guidance of Mr. Thomas Russell, the first Advertisement Consultant in England. This gentleman has an important clientele, his charges ranging from 2 guineas for an interview. He has been known to receive £50 for preparing the necessary "lay out" and "copy" for a small booklet for advertising purposes.

The chief feature of the consultant's business is that he does not undertake the actual control of advertising. His work consists mainly of advising businessmen and preparing advertising matter. Briefly stated, the consultant is to the advertiser what the barrister is to his client.

During the last 4 years, more than ever before, advertising has been much sought after as a remunerative and high standing profession. To a great extent this is the result of the formation of Advertising Schools. Mr. Thomas Dixon, whose name, by the way, is followed by the letters "F. I. S. A. C." (Fellow, Incor. Society of Advertising Consults), was the pioneer of this admirable movement. The courses of these institutions are expensive but they are known to have done good to those who have followed them.

Readers of the above will instinctively wonder how many years have yet to elapse before Indian Advertising reaches anything like the English standard.

No one can deny that there is a great deal to be desired in the advertising as seen in this country. Quite apart from an admitted lack of appreciation on the part of the advertisers themselves, what could be less inspiring than the average Indian newspapers' advertisement columns? If the art of advertisement designing and writing does not run high among the firms of India, this cannot be said of the Press, for many journals in this country are controlled by foreigners who are fully alive to its future possibilities. Yet in newspapers is to be traced the slightest effort by the proprietors to set and display their advertisers' announcements artistically and effectively. Then, why do we so often see in Indian newspapers, most of the advertisements crowded in one confusing mass right away from the news portions? Why do not those who "pay the piper" manifest a little more interest in this matter, which, after all, would be to their own advantage.

Such advertisements as are often seen in the high class Indian papers would not be tolerated in England even in the poorest of the Provincial Press.

A Cotton Corner in Bombay.

There was a sensational corner of Broach cotton in Bombay last month. The broker who effected the corner is Mr. Balchund Uggerchand, a well-known Marwari. Mr. Balchand bought a lakh and thirty thousand bales. In the commercial histroy of Bombay there is no parallel to the magnitude of the operations in Broach cotton by one individual, and the remarkable feature about the whole affair is that every bale of cotton tendered was received and duly paid for.

An interesting feature of the whole affair is that the prime operator, Mr. Balchand, is not a cotton merchant of large commercial importance. He is a *bania*, and is regarded as semi-holy by his caste fellows, and is now away on a pilgrimage. It seems that when he was buying in January a certain Hindu group of cotton merchants began operations in Broach cotton which were aimed at his being forced into a corner. He gathered his wits together and fought. His caste fellows, out of regard for his religious character, backed him up and assisted to finance his transactions by bringing in their hoardings from their houses in the districts. Mr. Balchand is said to have understood the operations. The whole loss of the corner falls on Mr. Balchand's original Hindu enemies.

Considerable litigation was apprehended but matters have quietly settled themselves since.

The Economic World.

The Cotton Excise Duty.

At the annual meeting of the Bombay Mill Owners' Association held on the 9th April, the Chairman, Sir Dinshaw Petit, entered a vigorous protest against the levy of the excise duties "on Indian cotton goods. He characterised it as 'iniquitous' and 'wholly injustifiable' and as an "unnecessary embargo on the important industry which India has been able to rear after the model of the West." As the authorities have not granted redress in spite of repeated representations, Sir Dinshaw appealed to the association not to let the matter drop.

Study of Economics.

Sir Theodore Morison presided on the 27th March at the annual meeting of the Patna College Chanakya Society which is an association of students of economics. These students make a point of studying economics, not merely out of books, but in the bazaar, and in villages and fields; and also of learning as much as they could from people who have more knowledge and experience of the business of life than themselves. Sir Theodore stated that this was the proper way of enquiry. It was now realized that what are known as "economic laws" are for the most part generalizations about the economic phenomena and the industrial structure of Europe. These generalizations do not necessarily hold good in India. The economic structure of England was different from that of India. He advised the students to write monographs of industries as they are conducted in India, so that they may take a most useful place among the economic books written at the present day. The London School of Economics was working on these lines. Its members began by making detailed inquiries and taking down notes as to what was actually taking place in some industry or social group. They formed, *e.g.*, a separate branch for studying Railways, another for studying Banks. Work of this kind done in India would be of extreme value to European students. Professor Marshall had said to him: "We suspect, but do not know for certain that the present economic structure of India resembles the economic structure of England before the Industrial Revolution." All that is available is fragmentary evidence.

Sir G. F. Wilson and the Tariff Problem.

The following speech was delivered by the Hon'ble Sir Guy Fleetwood Wilson in connection with the Resolution, regarding preferential tariffs for India, which was moved by Sir Gangadhar Rao Chitnavis at the meeting of the Imperial Legislative Council held at Delhi on the 17th March, 1913.

The resolution which the Hon'ble Member has moved with much ability is frankly directed at increasing the revenue of India from indirect taxation. Whether a preferential tariff, if logically carried out, would have the effect of increasing our net revenue, is an open question and I must add that I do not feel sufficiently despondent about the future to assume that, even with the loss of the opium revenue, a large addition to the taxation receipts of India will be found necessary. If bad times should come—and it would be foolish to ignore the fact that they may come—the loss of the opium revenue will undoubtedly be severely felt. But there is much room for the development of India's other resources, and it has yet to be shown that there is no room for further economics in our administration. I have been blamed for imposing taxes for which the immediate reason did not appear to have been foreseen by my critics. I might, if I were so disposed, point to this very resolution as my supreme justification. I have no wish, however, to enter into controversy to-day, and I would only suggest for the consideration of the Council that I leave the resources of India on

a stronger and a sounder foundation than when the opium danger was first on the horizon, and that, when temporary difficulties arise, there may be other and preferable methods of dealing with them than by further additions to the indirect taxation of this country. On this point it is needless for me to insist further. It is needless mainly because the real purpose of the present resolution is to open the discussion of a matter which we are all agreed may at any time become of the most vital importance to India's financial and economic position. I would rather, therefore, look at the spirit than at the letter of the resolution, and come at once to a dispassionate consideration of the great and far-reaching issues which the Hon'ble Member's proposal has raised. I preface my remarks by saying that the pressure attributable to recent events has made it impossible for me to bring up to date or indeed to verify the figures I shall use, but I am fairly certain that any modifications in regard to them, which might have to be made, would not affect my conclusions. Also before dealing with the main question, I desire to make our position clear, and to state what our attitude is and indeed must be. Although the Government of India are not in a position and do not now desire to declare a policy of their own, they do not think it right to resist a reasonable discussion of the tariff problem in India. At the same time, I would say in regard to myself that I should have been very glad not to have had to discuss this subject at all. Since, however, the question has been brought to the forefront, it becomes my duty to the King's Government, and it is also consistent with my own convictions, to place the objections to Protection in the forefront. In this country we are fortunately not driven to consider this or any other question from the standpoint of party politics. I think this Council, representing public opinion, may fairly claim that it approaches the consideration of all matters affecting India exclusively from the standpoint of what is best for India, and that it is able to do so, not so much because our political structure eliminates the party element, but rather because Indian public men, although they differ so greatly in race, religion and interests, have hitherto shown themselves desirous of merging their personal opinions and inclinations in a combined and general effort to advance the welfare of their country. This happy condition of affairs admits of India giving full, temperate and, what I may term, academic consideration to a subject which is unfortunately so often dealt with elsewhere, in a spirit of acrimonious controversy. The subject is one which in the public interest calls for consideration, not recrimination. It is my wish, and it is my duty, to disclaim any attempt at anything approaching a pronouncement of policy. In the first place the issue is not in being, and in the second place, any policy which may at some future date commend itself to India, will obviously have to be governed by the policy which obtains in England. In this connection I ask you to consider with me the economic relation of India to the Empire.

Relation of India to the Empire.

The striking feature of the present economic relations of India is the predominance of the United Kingdom over any other external country both in regard to import and export trade. Of the import trade of India, the United Kingdom holds 49 out of 72 millions sterling. Of the export trade, the United Kingdom holds 32 out of 123 millions. Fully half of the import trade consists of cotton piece goods from Lancashire. In regard to the other half of the import trade, the figures show that so far, successful competition in India on the part of foreign countries has not been carried far. Investments in India by external countries show a still greater British preponderance. According to the calculations of Sir George Paish, taking public issues only, the United Kingdom had no less than £365,400,000 invested in India and Ceylon, in 1910. To this must be added the large but undiscoverable figure of British money invested through private channels. No other country has financial interests in India at all comparable

with those of the United Kingdom. Indian native industries cover a wider field than is generally supposed, but relative to the resources and population of India they are small in volume and have not in recent years shown much increase. If we take into account the slow rate at which economic changes take place, the greatness of the interests affected, and the political, financial and constitutional relations between India and the United Kingdom, it is clear that the development of India in the future must be dependent on, and primarily affected by, the policy pursued by the British Empire as a whole and particularly by the United Kingdom. But changes not dissimilar in character from those which may be observed in other parts of the British Empire have taken place in the last 25 years in the character and direction of Indian trade. Modern methods of production have extended throughout the world ; not only Western countries like the United States and Germany but the Far East and Japan have enormously increased their productive power, and external markets for their goods have become a vital necessity to the stability and progress of their trade. India has been not unaffected by this devolpment. The preponderance of the United Kingdom in India, as in other parts of the Empire, is still great but it is diminishing. In the last 25 years the share of the British Empire in the import trade of India has fallen from 91 to 70½ per cent., while the share of foreign countries chiefly Germany, Belgium and Austria-Hungary, has increased from 9 to 29½ per cent. Moreover, the United Kingdom has ceased to be the chief external market for Indian products. The United Kingdom proportion has fallen in the same period while the proportion of foreign countries, chiefly Germany and the United States and France, has increased. Time has not admitted of my working out the percentages. Even if allowance is made for the growth of direct trade, by diversion from the United Kingdom to foreign countries in this period, this general statement is still true. On the figures, relating as they do to a considerable period of time, it may be assumed that the competition of foreign and Western countries for the Indian market will increase and that the proportions of trade will, under present conditions, show a steady movement in the direction indicated. But there is one important factor to be considered in regard to India which is of nothing like the same importance in regard to any other market in the British Empire, and that is the development of Japan. Japan has entered fully into the economic methods of the West. The new Japanese tariff shows all the leading features of that fiscal policy which has been employed with such effect in the development of the trade and resources of Germany and of the United States and other Western countries. But Japan enters this new field of commercial statesmanship under conditions very different from those of the West in regard to her nearness to the Indian market, the quantity and cheapness of the labour she can employ, and the facility with which she can imitate the products which have hitherto found favour in Far Eastern markets and adapt her methods of production to their needs. Competition in the Far East itself for the Indian market is therefore certain to be of a very formidable character, and if China follows Japan in the adoption of Western economic methods, the effect on the balance and adjustment of Indian trade might be incalculably great. So far, I have been stating facts which are accessible to any student of contemporary economics and I have refrained from drawing any inferences from them whatsoever. But I have no wish to shut my eyes to the irresistible inference which they arouse in certain minds. The school of thought which regards the days of free trade as numbered would take my facts as clear evidence that the duty of India, as part of the British Empire, is to build up for itself a tariff wall which will check those threatened diversions of our trade. If Germany and the United States, they will say, have already seized, and if Japan and China are going to seize, upon an ever increasing share in our trade, is it not

our obvious duty to re-adjust our schedule of import customs in such a manner as will check those tendencies and place our market more freely, instead of less freely, at the disposal of our own Empire? Incidentally, they add, will not arrangements of this nature operate to protect and foster the nascent industries of India?

Protection.

The Indian Protectionist movement has undoubtedly, to a certain extent, been encouraged by the agitation in favour of Protection which has for some years been carried on—so far without practical success—by a section of the community in the United Kingdom. With that great controversy in its broader aspects it is not my place or my intention to deal. But you will remember that the agitation for Protection is linked with a policy of Imperial Preference; a matter which is of considerable interest to India. I have been at some pains to discover the proposals advocated under the term Tariff Reform so far as they concern the trade relations of the Mother Country with India. So far as I have been able to learn, the references to this subject have been as yet too vague and indecisive for much to be deduced from them. The "Speakers' Handbook" of the Tariff Reform League propounds preferential proposals with regard to India in a paragraph (page 185) which, whatever other opinions may be expressed about them is certainly concise and intelligible. It is as follows:—

"Preference would mean to India that the United Kingdom and the Colonies would give freer entry to Indian tea, coffee, sugar, wheat and all Indian staple products, and it would mean to us that the Indian import duty on a large number of British manufactures would be either abolished or reduced?"

I make no comment upon it, except to invite attention to the last portion of it, which must be of intense interest to all of us; and especially to those who are imbued with the spirit of Protection for our industries. The broad question of whether Protection would work to the general economic advantage of India or not, is deserving of careful consideration, as the issue may at some future time be forced to the forefront. One object of tariff Protection is presumably the "encouragement" of domestic industry, and it is effected by the imposition of Customs duties on imported goods for the express purpose of prohibiting, or at any rate restricting, the imports of such goods as are similar to, or may be substituted for, goods manufactured or produced in a given country. The means whereby Protection works, and the method in which it is intended to work, is by raising home prices. If you do not raise home prices as a result of restricting foreign competition, you can hardly "encourage" industry; if you succeed in "encouraging" industry by a tariff, it can only, I think, be by raising home prices. That is an axiom on which all economists appear to be agreed. Now any such artificial increase in home prices which Protection ensures, and by which it operates, may lay grievous burden on the shoulders of our population. In some countries where protection has been established the evils of this inevitable result have indeed been mitigated by natural or artificial circumstances unconnected with tariffs. Thus the natural wealth and vast mineral and agricultural productiveness of the United States, and the inventiveness and energy of their inhabitants, have enabled them for many years to bear a tariff burden under which other communities must have succumbed. The energy, thrift, and enterprise of the population of Germany, and the rigid discipline under which they are schooled, have had a somewhat similar result in that country. But even in Germany and America the revolt against Protection has been growing in recent years, and appears to incline towards a movement away from Protection. I mention these instances to show that the introduction of Protection into a country is not universally and necessarily followed by disaster. But the natural and economic conditions which prevail in India

are what we have to consider. In other words, what results would Protection produce for her? We have here an enormous population of the very poor; and, however limited their physical requirements may be, the cheapness of the things they need is essential to their very existence. Can it be denied that artificilly-produced dearness would be injurious to the well-being of a great majority of the people of this country? And if we are told that Protection will increase wages so as to compensate the wage-earner for the rise in prices, we must remember that by far the largest proportion of the working Indian population is engaged in agriculture. Assuming that Protection would lead to a general increase in the wages of our manufacturing industries, what would be the effect on the rest of the population, who are to a large extent merely consumers? Where are the increased wages to come from which are to enable them to face with equanimity any artificial increase in the cost of living? Agriculture is not in the main, so far as I understand the Protectionists' arguments, one of the industries which a tariff wall would assist in India; and consequently the rise in wages of the manufacturing classes would not extend *ipso facto* to the rural classes. Very possibly the general operation of economic laws would tend to pull up the remuneration of the latter in time; but especially in a conservative country like India the process would be slow and gradual; and in the interval an immense amount of hardship and suffering might be imposed on the great body of our Indian workers. A time of transition is always painful; and in this case it would also be protracted. Protection attempts to apply State direction to production. It diverts trade from what may be called its natural channel into an artificial channel. It is often held that if by Protection an old industry is encouraged or a new industry created in a given country, that result is a clear indication of an increase in national wealth. But any such gain may be outweighed by a loss. The industry so artificially created or encouraged has been linked to a pauper. It cannot continue to exist unless it continues to receive dole after dole, and thus it lays a lasting burden on the general consumer, and through him on the economic growth of the State.

Infant Industries.

Economists have always been inclined to admit, to a limited degree, the efficacy of what is known as the "infant industry" argument, as used by List, Mill, and others, and which is adopted in an exaggerated form by some Indian Protectionists. It is based on the theory that if the failure to establish an industry in a given country on a sound basis is due merely to lack of skill, or to some other obstacle which technically might be surmounted if that industry were granted temporary tariff Protection, it might be advisable to grant it Protection. Economists hold that such Protection would indeed inflict a burden on the community by raising the prices of necessaries, but argue that if the industry in question should, after a limited number of years, be sufficiently firmly established to be able to exist without a tariff in the face of foreign competition, the resultant gain might counterbalance or even exceed the initial loss. Can the advocates of protection in India satisfy the legislature that, under a protective tariff, it will be possible to establish industries in this country which will eventually be able to fulfil the conditions thus laid down as a test of success? Do you believe that, with—I quote from Mill—"a moderate Protecting duty granted for a certain limited number of years—say ten, or at the very most, twenty, during the latter part of which the duty should be on a gradually diminishing scale, and at the end of which it should expire," you can build up industries in India? Can you assure those responsible for the Government of India that these industries "will be able to produce articles as cheap as, or cheaper than, the price at which they can be imported" under a limited Protective system? Unless you are in a position to demonstrate these important

points, the case for tariff Protection is on unsound ground. Foreign competition, unimpeded by Protection, may have acted as a stimulus to industry, necessitating enterprise, inventiveness, economy and efficiency in production to a high degree. It has not had that effect to any appreciable extent in India; but until our endeavours to improve our industrial methods and organization in general have hopelessly failed, we can hardly call on the State to assist us by protecting our industries at the cost of the enormous number of our very poor consumers. I have now stated a number of the chief arguments for and against Protection as an abstract theory. I am conscious that I may have stated them with somewhat more insistence on the objections than on the arguments in favour of the theory; but the reason for my doing so is that, if I may say so, the arguments making for Protection are more prominent in the mind of Indian publicists than those which are hostile to it, and, although I am very far from suggesting that this Council approaches the subject with bias in favour of Protection, I am anxious that they should clearly realise the facts which India would have to face if such a policy were ultimately adopted. On the other hand, I have refrained from touching upon some of the most powerful reasons that ought to make a country hesitate before embarking on a Protectionist policy. For example, I have not attempted to allude to the financial aspects of Protection. That branch of the subject would require a very lengthy explanation. It would have to take cognizance of the great alteration which a tariff wall in India would effect in the balance of our trade, in the arrangements that now exist for the payment of our external debt and in the whole of our exchange policy. This aspect of the question is one of extraordinary complexity, as well as of no small speculation, and I need hardly say that it would have to be most exhaustively considered before any steps could be taken towards tariff reform. I have also intentionally avoided any reference to the ethical aspects of Protection as a State policy, because I do not wish to bring to-day's debate on to a plane of controversy. But I would earnestly ask all Honourable Members who intend to work at this subject to study, if they have not already done so, the inner history of the influence of Protection upon political morality in the countries where it has been established for any length of time, and to consider with care whether the risk which other countries have experienced would be a fair burden to throw upon the awakening political life of India.

India within the Empire.

I come now to the next natural division of my subject, which arises from the consideration that India is part of the British Empire, and that its interests and its wishes cannot be ignored in any movements which affect the policy of the Empire in relation to the international trade. The cardinal feature of this consideration is the fact that India has already a tariff and that its tariff, although the rates have varied considerably from time to time and have in the past been materially higher than they are now, is essentially designed for the purposes of revenue and not with the view to protection.

In these circumstances it is of the utmost consequence that those who are responsible for the economic future of India should consider carefully what position India is to occupy in regard to the British Empire policy. Looking at the facts of the case and the admissions of foreign writers and statesmen, there can be no doubt that the policy of free importation practised by the United Kingdom in regard to her own home market has been of great advantage to countries like Germany and the United States carrying out their own economic views and in building up their own industries. But for the facility which British policy has created for the disposal of their surplus products the high tariff policy they have pursued would not have been attended with the success which they have actually enjoyed. The counterpart or that high tariff policy pursued in exclusively national interests by foreign countries, has been the exploitation

of such markets of the world as have been left open to their efforts. In the British Empire, however, the United Kingdom has for many years abandoned the exploitation of Colonial markets in the interests of the Mother Country and has left her self-governing Colonies free to do what her statesmen thought right in the interests of those Colonies, with the result that an Empire policy has grown up in the conditions so created different in character and in objects from any policy which the world has ever seen before, which has for its object the strengthening of the Empire as a whole by the development of the economic interests of its several parts, and the linking together of the Mother Country and the constituent States of the Empire by a co-ordination of policy and the intertwining of their economic interests by a system of preference. India, owing to special conditions, has not been brought into the general Imperial trade movement, but in view of the modification of the old ideas in regard to free importation and the economic principles underlying them, and the progress of events throughout the Empire in the last thirty years, it is conceivable that India may in the future be unable to maintain a policy of absolutely free importation under which she must suffer all the incidents of exploitation of her own market. Hence the key of the future policy of India must be found in observing what is the nature of the movement taking place in the rest of the British Empire, and in considering under what conditions India could fall in with any general policy of Empire preference. Let us see what the progress of the Imperial movement has been. The Empire consists of self-governing Dominions, Crown Colonies, Dependencies, Protectorates, at every conceivable stage of economic development; but during the last twenty years, irrespective of Governments and party changes in the Mother Country, the measures adopted by, or in the interests of, different parts of the Empire show a steady and continuous movement in the direction of Empire trade consolidation. Canada adapted the policy of preference in 1897, that is, she gave special tariff concessions to the United Kingdom and to the Empire as a whole, and under the successive changes of the tariff, Canada and the rest of the Empire have been drawn together in ever closer relations. Canada was followed by New Zealand in 1903, South Africa in 1906, Australia in 1907. Furthermore, a series of inter-colonial preferential arrangements between Canada, New Zealand, Australia and South Africa have been concluded, and to these has now been added an arrangement between Canada and the West Indies, which in some respects is more remarkable than any which have preceded it. Thus the self-governing portions of the British Empire excepting alone the United Kingdom and Newfoundland have gradually formed a network of Imperial and inter-Imperial preferential trading arrangements. The British Empire may be said to be regarded as consisting not of an aggregation of separate entities with no mutual relations to each other, but of a family of States animated by a common family purpose. Each State in the first instance organises its tariff and its policy to suit its own financial and economic needs and gives an Imperial sanction to its policy by granting to other parts of the Empire as large a measure of trade advantages over foreign countries as is consistent with its own economic development.

Colonial Preference.

The preferences in the tariffs of the self-governing Dominions, while differing in detail, have certain general features in common. The tariffs have for their main objects the production of Government revenue, the protection of home industries, the development of an export trade, and the encouragement of inter-Imperial trade. The tariffs therefore include :—

(*a*) Duties imposed for revenue.

(*b*) Duties on competitive products.

(*c*) Preference secured by (1) Free List for goods produced within the Empire (as in the tariffs of Canada and New Zealand) or the United Kingdom alone (as in the case of Australia) while duties are retained on similar goods from foreign countries ; (2) remission of duty in groups (*a*) and (*b*).

These methods operate separately or in combination.

The outstanding features of these methods is undoubtedly the adoption of an Empire Free List, and in regard to this method, the arrangement between Canada and the West Indies makes a new departure of great importance. In the case of certain items now imported from all countries free of duty, duties of not less than a certain fixed amount are to be imposed when the goods enter Canada from foreign countries, while freedom of entry is to

be maintained for goods from the British West Indies and the United Kingdom. It is not clear what is the position of other parts of the Empire in respect of these items, but I suppose it may be presumed that Canada preserves full liberty of action in the matter. It has to be remembered that this development of Empire tariffs has proceeded at a period when the United Kingdom has to take no decisive step in the direction of preference. In these circumstances it is impossible to say what final form Empire tariffs will assume, should the United Kingdom at any time fall into line with what appears to approach a general Empire movement. The United Kingdom, so far as her tariff policy is concerned, at present stands outside the general Empire movement and she is unable, so long as the present policy prevails, to enter into schemes of mutual Empire preference which have been discussed at successive Imperial Conferences, but if the policy of the United Kingdom were at any time to change, it is presumable that under any scheme of preference which has been suggested by reasonable statesmen in England, tariff advantages would be extended to Indian products. Under the scheme which, so far as is ascertainable, has been generally accepted in responsible circles in the Tariff Reform movement, it was held, I believe, that in a recent year £23,000,000 worth of Indian agricultural produce and manufactures would be directly benefited by tariff preferences in the United Kingdom. I do not advance that as my opinion. I merely allude to the opinion held by those who advocate a new departure. What we have to consider at this stage is not the details of a possible preferential tariff, but rather whether India could, if called upon to join in a great federation of Imperial preferences, respond to that call without sacrificing the essentially revenue character of its customs schedule. Any such movement would presumably involve, in the first instance at least, a loss of revenue unless we were prepared to raise the general incidence of the tariff from 5 per cent. at which it at present stands, to some higher figure in respect of those articles or countries for which there would be no preferences. That changes of this nature would be difficult, I cannot conceal; that they will be impossible I do not pretend. It can be urged that if any changes of this character were adopted in the Indian tariff, India would stand to lose by retaliatory measures on the part of foreign countries which now take so large a proportion of Indian produce. To this the advocates of preferential tariffs might possibly reply that throughout the civilized world there is an increasing tendency to regard preferential tariffs within an Empire, however widely scattered, as matters of domestic concern; and that these preferences in fact do not now bar Colonies from participation in the advantages of treaties with foreign countries on the ground of discrimination. Furthermore the character of the exports of India to foreign countries would make it difficult for these foreign countries to retaliate unless the whole construction of their tariffs were modified and they were prepared to inflict damage on their own industries, for India exports to European countries and the United States nearly £50 millions worth of merchandise which consists chiefly of raw materials for manufactures, for the most part admitted free of duty, and also of food stuffs.

Conclusion.

Let me emphatically repeat that I have not in the foregoing remarks attempted to advocate any departure from a free trade policy. To do so would be to travel entirely outside my province. All I have attempted to do has been to indicate certain aspects of the case which appear to have some bearing on this all-important question. I am not possessed of the presumption even to hope that the few, and I fear somewhat superficial, remarks which I have offered will assist you in crystallizing your views on this subject, but I do hope that they may through you induce a full, temperate and unbiassed consideration by the Indian public of a question which must in the future vitally affect India and its prosperty. It is this consideration which I would now invite Hon. Members to undertake for themselves after a full study of the many complex questions involved. I am far from complaining of the character of the debate to which we have just listened. It has been characterized by the sobriety and sense of responsibility which invariably marks the deliberations of this Council; but I am sure I shall not be accused of any lack of courtesy if I suggest further consideration of the intricate and delicate issues which I have endeavoured to bring to your attention. These issues need the most careful study; and until they have been thoroughly considered from all points of view, I am of opinion that it would be unwise and premature for the Council to commit itself to the opinion embodied in the present resolution which I must therefore in behalf of Government oppose.

The Financial World.

Royal Commission on Indian Finance.

His Majesty the King has been pleased to approve the appointment of a Royal Commission to investigate and report upon certain administrative questions relating to Indian Finance and Currency. The Commission is constituted as follows :—The Rt. Hon'ble Austen Chamberlain, M. P., Chairman, Lord Faber, Lord Kilbracken, G. C. B., Sir Robert Chalmers, K. C. B., Sir Ernest Cable, Sir Chapurji Burjorjee Broacha, Sir James Begbie, Mr. Robert Woodburn Gillan, C. I. E., Mr. Henry Neville Gladstone, Mr. John Maynard Keynes, Cambridge.

The following are the terms of reference;—To enquire into the location and management of the general balance of the Government of India, the sale in London of Council Bills and transfers, the measures taken by the Indian Government and the Secretary of State for India in Council to maintain the exchange value of the rupee in pursuance of, or supplementary to, the recommendations of the Indian Currency Committee of 1898, more particularly with regard to the location, disposition and employment of the Gold Standard and Paper Currency Reserves, and whether the existing practice in these matters is conducive to the interests of India; also to report as to the suitability of the financial organisation and procedure of the India Office and to make recommendations.

In pursuance of the above, the Local Governments, Chambers of Commerce, and Presidency Banks, have been asked for the names of non-official gentlemen in India, who may wish to give evidence before the Commission. All names received will be forwarded at once to the Commission in England but no promise can be given that any witness will be heard by the Commission nor can any statement be made as to the date when those whose evidence will be required will be called on.

A State Bank for India.

The following is the *Times*' article referred to by us last month.

The pending expert inquiry into the management of Indian currency is certain to have its attention directed to the proposal to equip India with a State Bank with functions analogous to those of the Bank of England, and it is desirable to indicate the grounds upon which this development is advocated. Although the question of banking facilities was not specifically referred to the Fowler Committee in 1898, it transpired that eminent financiers, such as Lord Rothschild, Mr. Alfred de Rothschild, and Mr. (now Sir Everard) Hambro were of opinion that the best method of maintaining the Gold Standard and also of meeting the demand for increased credit lay in the establishment of a State Bank.

The question closely affects the three Presidency Banks of Calcutta, Madras and Bombay—so closely, indeed, that this was the main obstacle to materialisation of the project in 1898-99. The Government keeps a portion of its headquarters balances in these joint-stock banks and there are reciprocal statutory obligations between them and the State which must be modified or disappear if an all-Indian institution is created. Obviously the first step would be the consolidation of these banks as the nucleus of the new organisation. But the Presidency Banks remain inadequately capitalised and strictly compartmented, and they are incapable of attaining that full development which would be possible if all parts of the country were open to them. They are also debarred by law from raising money in the English market; but obviously a central institution with substantial capital should be allowed, under the supervision of the India Office, to have an agency in London to transact ordinary business, especially business connected with the maintenance of the Gold Standard.

FUNCTIONS OF THE BANK.

There can be no question that a State Bank would have a most salutary effect in securing the confidence of the people with money to invest. India suffers from a vast amount of infructuous capital, which a State Bank would be likely to draw forth in the form of shares or deposits. Hitherto the investment of money by deposit in banks has been on a much smaller scale than it ought to be; but when one looks back upon the failures of numerous more or less unsound banks started in India during the last half-century, the reason is not far to seek. The Fowler Committee reported that banking facilities had not kept pace with the increasing trade, and this is much more the case to-day. Another great advantage would be a far better utilisation of the capital of the concern than is possible in the case of the three Presidency Banks under existing limitations. The central institution would have branches in every part of India, and would be able to let the capital flow in the directions where it was most needed. The facilities it would have for financing trade would go far to eliminate the sharp seasonal divergencies between discount rates in India, where they range in the course of a year from 3 per cent. to 8 or 9 per cent.; and the adequate capital at disposal would tend materially to bring about a lower average level.

Like the Bank of England, the institution would no doubt be entrusted with the management of the paper currency. As Sir Everard Hambro said in his note to the report of the Fowler Committee, a State Bank would be likely to carry out such work in a manner more in harmony with the trade wants of the country than any Government department, however, well administered. Mr. Alfred de Rothschild told the Committee that the detailed working of a managed currency "requires a technical skill and adaptability which can hardly be looked for in a Government department." The business facilities the bank, with its many branches, would offer would have the effect of greatly expanding the use of paper currency, which under purely official management has not increased in any thing like the proportion that ought to be the case considering the growth of education, trade, and industry, and the large circulation of capital in recent years.

INSUFFICIENT CAPITAL.

One of the difficulties of the Government is that the Presidency Banks are not sufficiently capitalised to be useful to the Treasury in times of temporary need, as the Bank of England is here. The contrary is, in fact, the case, the Government being looked to help these institutions. Many years ago it was the custom to keep the whole of the Treasury balances at the Presidency towns in these banks; but, to quote an official statement in the *Imperial Gazetteer*, "experience showed that the practice was dangerous, because it might and did on one occasion, so happen that the Government could not withdraw funds of its own which it needed without seriously disturbing the money market." Given a State Bank, with large capital and plenty of resources, the Government could again keep its headquarters balances in bank custody without any apprehension of monetary disturbances in consequence of withdrawals, and on the other hand, it would be able to depend upon the bank to advance money if the needs of the State momentarily required the assistance. In this connection it may be pointed out that instead of being a rival to existing banks, the central institution would serve the same purpose in India as the Bank of England serves to other banks here, as a feeder and a supporter.

MAINTAINING THE GOLD STANDARD.

Finally, there can be no question that the bank would be useful in helping to maintain the Gold Standard, by contributing to the flow of gold and silver as wanted between England and India. The Fowler Committee based its proposals on the principle of the free inflow and outflow of gold remarking that it was in many ways as important that money should be able to flow out without depreciation when no longer in relative demand as that it should

flow in when required. Hitherto the inflow has not been accompanied by an outflow, but a State Bank would be the most effective instrument for securing to India the advantage of responsiveness to international conditions.

Railway Finance.

The administration of the Railways in India has been criticised a good deal of late by the Anglo-Indian Press and the European Chambers of Commerce. Last month, we referred to their complaint of congestion of traffic owing to inadequate facilities for the transport of traffic. Elsewhere in this issue, we examine the need for the investigation of railway matters by an expert which has been so strongly urged by the European mercantile interests. There remains to be dealt with their chief complaint, namely, that adequate funds are not provided every year for railway construction. On the Bengal side, the complaint on this score has been loud indeed. Thus the Hon'ble Mr. A. M. Monteath addressing the Bengal Chamber of Commerce recently observed:

If you will refer to the Railway Commission's report of 1907, you will see that it found the equipment of Indian Railways was in 1907 unequal to the requirements of trade, and they recommended that Railway allotments for the next few years should be 12½ millions yearly as a minimum. This recommendation has been systematically ignored ever since, as the following figures will show:—In 1907-8 Railways were allotted 10¼ millions: in 1908-9 Railways were allotted 10 millions: in 1909-10 Railways were allotted 8½ millions: in 1910-11 Railways were allotted 7½ millions: in 1911-12 Railways were allotted 8 millions: in 1912-13 Railways were allotted 9 millions, a total of 53¼ millions in 6 years, or an average of something under 9 millions instead of 12½ millions per annum. Had Government followed the recommendation of their own Commission and given Railways 3½ millions more per annum or for the six years under review an extra 21 millions would the Railways be in the plight they are now in? I doubt it. However, there is no use in crying over spilt milk, except to learn the lesson how it was spilt and to take steps to prevent a recurrence. The remedy of course is to allot more money.

Continuous Allotments.

The whole system of railway allotments should, I think, be reconsidered and some better method devised whereby a sufficiency and a continuity of allotments can be relied on and worked up to. India's Railway resources are enormous, and it is the greatest commercial asset directly worked by the State; and in my opinion allotments should be made with no stinted hand; further, the time during which the money is to be spent should be extended considerably, say, for three years; thus money allotted this year should if necessary be available throughout the next three years, money allotted next year available for a further three years and so on. This may be diametrically opposed to all Government methods in the past, probably it is, but things are moving in the world and the Government must elect to move with the times or fall behind. Railways want ample money, regular money, and a continuous supply of money. Further, Railway allotments should never be cut down in a lean year to meet the other needs of India. Lean years are bound to come but the Railways should be allowed to steadily and continuously expand whether the year be lean or fat. It is only thus that when fat years come the Railway is found not wanting and India's trade is not checked.

More Railways Wanted.

I should like to draw attention to a statement frequently made by the President of the Railway Board to the effect that the Railways were commercial concerns, and had to be worked on commercial lines. This is, however, only partly true. The Railways certainly, are in name, commercial concerns, but in point of fact they belong, and rightly belong, to the State, and should be worked for the benefit of India. If India is held for its Commerce and I maintain that it is, then Railways should be expanded ungrudgingly. India's need is transport, more transport, and until commerce

is fully met in the way of transport, which it won't be for many a long year, Railways should have the first call to their full requirements on money.

PRINCIPLES OF ALLOTMENT.

In answer to the above indictment it is sufficient to quote the following paragraph from Sir Guy Fleetwood Wilson's Financial Statement. It explains the principles observed by the Government of India in allotting funds for railway expenditure in India, Sir Guy said :—

I have already given in the revenue account some of the more important Railway figures. The results of the present year are remarkable. In 1912-13 we expect the return on the capital at charge to be 5·89 per cent. against 4·48 which was the percentage in 1909-10. If we take the railway revenue account as a whole and set the interest charges, the annuities, sinking fund payments and minor debits, such as cost of land and surveys, against the net earnings, we show a surplus of £5,616,000, the highest in the history of our Indian railways.

What I am now especially concerned with is the railway capital account, and I give therefore the figures of railway capital expenditure during the last two years and compare them with the estimate for next year :—

	1911-12.	1912-13. Revised.	1913-14, Budget.
	£	£	£
Open lines including rolling stock	5,058,390	7,362,880	10,124,600
Lines under construction—			
(*a*) Started in previous years	23,54,666	2,781,400	1,875,400
(*b*) Started in current year	... 452,150	69,900	...
Total	...7,865,206	10,214,180	12,000,000

The figures to which I invite special attention are these. The expenditure on capital-account in the three years 1909-10 to 1911-12 averaged rather less than £8 millions. In the current year we budgeted originally for a railway programme of £9 millions. In the course of the year however we were able to increase the provision to £10½ millions out of an increase in our balances and other improvements. For the coming year I propose to draw somewhat heavily on our ample balances and am in consequence able to advance the railway programme for 1913-14 to £12 millions.

CAUTION IN RAILWAY FINANCE.

This proves, I think, that I am not unsympathetic on the question of railways. I recognise fully their immense significance as an instrument of general progress, their necessity for the development of trade, their growing and indeed momentous importance to the finances of India ; but in this, my last Financial Statement, I cannot refrain from a word of warning. In spite of the reckless utterances of obviously interested critics, I continue to deprecate any departure from a policy of the utmost caution in the matter of Railway Finance It may be that in the future it will be possible to give more scope to private enterprise and increase through its agency the funds available for railway construction, but for the present I have to regard railways as a strictly business proposition. Our responsibility is all the greater now that they have attained a position of supreme importance in our financial system. It is said that the remunerative character of our railways is beyond question, that our railways are the milch cow of the Government of India, and that I am ungrateful. But what is the position ? We are paying in the London market very nearly 4 per cent. for what we borrow. I bear in mind that in the current year the railways have paid us 5·89 per cent. But last year the return was 4·99 per cent., in 1910-11 it was 4·66 per cent, in 1909-10 it was 4·48 per cent. ; even in good years in the present state of the money market the margin is a narrow one. Let me remind you that so recently as in 1908-09 our railway system was worked at a net loss to the State. I said at that time that we must never allow our railways to become again, even temporarily, a net burden on the general taxpayer. I repeat that assertion. As matters stand, we

have in our railways a splendid asset. Let us safeguard that asset. Any admission of doubtful schemes, or failure to count in each case the full cost, any disregard of financial considerations will surely lead to deterioration of a most serious character. I urge that nothing be agreed to in the future which may weaken a position which is essential to financial prosperity.

The Hon'ble Sir Charles Armstrong representing the Chamber of Commerce, Bombay, does not accept this view, for he says:—"It is, I think, very easy to be overcautions. Caution is always advisable but if this matter was really regarded as a strictly business proposition—and these are the words used in paragraph 33—a scheme would surely have been put forward to raise money for investment in an enterprise which in the current year has returned as much as 5·89 per cent. and in the three years previous an average of nearly $4\frac{3}{4}$ per cent. As this is an all over rate, the return on the main lines carrying the trade of the country must have been much greater. As a business proposition, even if the money be raised at 4 per cent. the return on the whole system is satisfactory and in the hope—I might almost say with the certainty—of something better during the next few years, a business man would strain every nerve to increase his wealth by investing more money in the undertaking.

Construction of Branch Lines.

It appears however from Sir T. R. Wynne's speech on the occasion of the budget discussions that a most important development of railway construction is occurring in the direction of the formation in India of branch line companieswith the financial assistance offered by Government in their Resolution of 1910. These lines are all being constructed by capital provided outside the funds supplied by Government under the railway programme, and the capital so raised is in addition to that provided by Government. A very considerable number of proposals of this nature are now understood to be before the Railway Board, some from Indian firms of high repute. The Jessore-Jhenidah line promoted by Messrs. Ketter Mohun Dey and Company of Calcutta is almost ready for opening, and another company was successfully floated about two months ago in Calcutta to carry out some very useful branches in Northern Bengal. The great attraction of this investment is that the shares tend to rise in value, the shares of several such companies on the Bombay side being now at a substantial premium. These branch line terms have the very great advantage of offering to rupee capital in India a form of investment which is sound and has possibilities of growing in value, and experience is showing that it is a form of investment which is beginning to be much appreciated by Indian investors.

In a speech at the recent meeting of the Bombay Chamber of Commerce, Mr. Marshall Reid referred to the large source of capital available in this country and expressed the opinion that he could not think of any public security which would appeal more to the Indian mind than the very tangible one, of a railway security. Sir T. R. Wynne thinks that the capital required for branch lines in the future can be raised mainly by companies domiciled in India, formed under the branch-line terms of 1910 with rupee capital. There is every sign, he says, that Indian investors are turning their attention to this class of investment which the Railway Board has done its best to encourage and its development will add largely to the amount spent every year on railways in India and be a most substantial addition to the funds provided by Government in the programme which could, as has been the steady policy of the past, continue to be mainly devoted to improving the capacity of the existing lines. With this increase in the source of capital available, it should be possible for the Government of India to continue its conservative and sound financial policy of financing its railway and at the same time ensure the construction of the many branch lines required. It should be able to raise such additional capital as was wanted for branch lines on terms it was

willing to give and without affecting the rate of interest at which it now raises capital for railway construction. Another very marked feature is the great interest some of the leading Chiefs are taking in railway construction in their States. Schemes are now being worked out which collectively will involve the expenditure of some 5 crores of rupees, the whole of which capital will be found by these Chiefs.

A Gold Mint for India.

The following paras of the Despatch from the Government of India to the Secretary of State sum up the arguments for and against a gold mint for India.

15. We trust that we have now made clear to Your Lordship the nature and scope of our proposal. We have now to consider what we imagine to be the chief objections which may be advanced against it. It may be urged that the scheme would be ineffective, or that it is unnecessary, or that it would be extravagant, if not actually harmful.

16. In support of the view that the opening of a gold mint and the extension of gold circulation would be ineffective for the purpose of supporting exchange or of lightening our responsibility for maintaining the convertibility of our present token coinage, it may be argued that in a crisis gold coins would not be available for export. There is always a tendency at present, it is said, for the sovereign, to go to a premium, and this tendency becomes very marked when exchange is weak. The argument, however, is not conclusive: it has force under present conditions, but it is not true universally. We look forward in fact to a state of affairs in which the sovereign will become a familiar enough feature in the Indian currency to command no premium in ordinary circumstances, and we cannot admit that when the proportion of gold to the total currency is substantial it will not be available for steadying the exchange value of the rupee.

17. The second line of objection to a gold coinage is that gold already enters India freely, that there is no internal demand for sovereigns which the ordinary import channels do not satisfy, and that, so long as the Indian public can obtain as many sovereigns as they need, it is immaterial to them where the coins happen to have been minted. In support of this view is adduced the very large accumulation of sovereigns which has grown up in our Currency Reserve during the last eighteen months of busy trade. The supply from the sources indicated continues, however, only so long as the export trade is brisk. It ceases the moment there is a slackening in the outward current of trade, and as the experience of 1908-9 most plainly shows, we are liable at any time to be left without the means of replenishing the active circulation.

IS IT NECESSARY?

18. It may also be argued that a gold coinage for India is unnecessary, because there is no essential connection between a gold standard and a gold currency. This assertion is one the complete application of which under Indian conditions may be questioned and that for two reasons. In the first place, metallic currency in this country forms a large proporation of the internal media of exchange. Secondly, the ebb and flow of currency requirements fluctuates greatly in India with its essential dependence on agriculture, and its liability to extreme vicissitudes of seasons. A glance at Indian currency statistics is sufficient to establish this proposition. After the famine of 1907-8 the return of superfluous currency to Government was extremely heavy, and practically the whole of the return was in rupees. The difficulties that arise in such a situation—and we have suggested that they may, on another occasion, be much accentuated—are sufficiently obvious. These difficulties would disappear if for a substantial portion of our present and token coinage we could substitute a currency having intrinsic value and acceptable therefore in international trade, and we are driven to the conclusion that our only possible policy is to base our standard on two sure foundations, adding gradually to the reserve of gold in England an effective gold currency in this country.

19. Lastly, we have to consider those objections to a gold currency which are based on the assertion that the coinage of gold in India would be wasteful or expensive. It would be wasteful, it is alleged, because our new sovereigns would be either melted or swallowed up in hoards as soon as they were issued. It would be expensive because we should have to bear all the cost of maintaining the purity of the coinage as well as of the original minting.

20. These two arguments might, we think, be taken as mutually destructive. If the new sovereigns are to be melted as soon as they leave the mint, we cannot be at much expense in maintaining them. But we do not anticipate that either argument will be regarded as a serious impediment to our proposal. That the melting and hoarding of sovereigns will continue to be common practices in India is undeniable, just as the rupee was melted and hoarded in large quantities when the Indian mints were open to the free coinage of silver. But we cannot imagine that they will all be melted, or even the major part of them, for it is hardly likely that bullion will be brought to the mint if it is to be reconverted immediately. We do not think that there can be any reasonable doubt that some proportion of the new sovereigns would be retained, possibly at first a small proportion, but a proportion which will steadily grow, and as it grows, familiarity with the sovereign will increase, and its place in the active currency of the country will extend. Again every sovereign which goes into hoards, and releases Rs. 15, is *pro tanto* a diminution in our responsibility for maintaining the parity of the rupee.

FURTHER CRITICISMS REVIEWED.

21. The objection that the sovereign would be an expensive coin is one that carries little weight. The actual minting of the sovereign is, we believe, comparatively simple and cheap, and the cost of making the necessary addition, to the present equipment of the Bombay Mints would be inconsiderable. We understand that refining is also a simple matter, now that the electrolytic process has been perfected. It may be urged that the Government will become responsible for the purity of the coinage, and will have to bear all the cost of wear and tear, up to the legal tolerance. We think that the popular notion of this responsibility is greatly exaggerated. It already rests upon us in regard to the sovereigns which enter India in great quantities on the balance of trade, many of which are worn. If, instead of those worn coins, we are able to manufacture good coins from bullion which has been imported in the place of sovereigns, our responsibilities will be actually lightened. It is of course impossible at present to say what the loss will be on new coins minted in India. But we anticipate that the abrasion in India, owing to the different habits of the people, will be materially less than it is in England. When the late Lord Goschen undertook to rehabilitate the British coinage in 1891, he put aside only £600,000 for the purpose. We understand that the greater part of this sum was expended in the re-coinage of half-sovereigns, with which we shall not be concerned; the remainder was all that was necessary to restore the sovereign coinage of the previous fifty years. If this may be regarded as an analogy—and we know of no other, the cost of the work to us, provided it is kept up to date, would be a very small fraction of the annual interest upon our profits from the coinage of silver.

22. In this review of the criticisms directed against our proposal, we have already brought to notice many of the arguments which favour it, but in conclusion it is, no doubt, desirable to develop briefly the affirmative side of the discussion. We may say at once that we do not claim that the coinage of gold in India will be a panacea for all our currency ills. Indeed we do not imagine that its influence will be greatly felt at first; but such a measure will mark a step along the path which has been authoritatively accepted as the line on which our currency policy must develop, and in time it will be of great assistance in maintaining the stabilityof our currency system.

CHANGING HABITS.

23. This policy, we venture to think, will be materially assisted by the change in the habits of the people which we have already mentioned. In particular, the awakening interest in banking which is perceptible in many parts of the country, the growth of the co-operative movement, and the increase of commercial openings for local capital, gives promise that the hoarding habit will decline.

As gold ornaments and bullion come out of hoards, some portion of them, at least, will find their way to the mint—if there is a mint open to receive them—and in this way, it will be possible to add to the stock of sovereigns in the country. Even if the process be regarded as little more than hall-marking the people's gold for them, it will accustom the people to the idea that their savings are as easily converted into gold coin as into rupees or currency notes, and will help to dissipate the notion that the sovereign is a thing apart from every day business. But we consider that the process will be more than mere hall-marking, and that it will not be confined to the ornaments now concealed in the people's hoards. We believe that much of the "high touch" bar gold, which in favourable years enters India to settle the balance of trade, will be brought to the mint for conversion into the handier form of sovereigns. The present position indeed appears to us anomalous. Gold coin is readily converted into bullion, but there are no facilities for reversing the process. It cannot be expected that bullion in the country should be sent home to be coined and brought back in the form of sovereigns, and the current consequently sets all in one direction. Were a gold mint established in the country the position would be entirely changed. We have said that we cannnot expect gold to come back to us in times of dull trade and dull exchange. But when trade is brisk and exchange high, there may be a stronger demand for gold in the shape of coin than as bullion, and it should, then, in place of importing sovereigns, be found more profitable to use the bullion already in the country by passing it through the mint. There may be occasions also when the Exchange Banks may find it to their advantage to import bullion for the purpose of coinage rather than sovereigns. In a matter of this kind, no one can be dogmatic, but in any case there is at present an artificial barrier opposed to the free conversion, when required by circumstances, of bullion into coin, and it is one of the objects of our proposal that this barrier should be removed. A free movement being then established between coin and bullion in both directions, we cannot doubt that the effect would be to swell the volume of sovereigns in the hands of the people and increase their active circulation.

Of the advantages of such an increase in the circulation we have already spoken. It diminishes the pressure on the Government of India for the coinage of silver. It keeps down the heavy responsibility that rests on them for the convertibility of the rupee, and thus simplifies the problems of exchange.

ARGUMENTS FOR THE SOVEREIGN.

24. The coin, which we ask permission to manufacture, is the British sovereign. On previous occasions, the relative advantages of the sovereign and of an Indian coin have been discussed at length, but the main argument in favour of a special coin has always been that the sovereign could never be popular, and this argument has now lost practically all its force. On the other hand, the disadvantages attached to gold pieces which would be exclusively Indian are obvious. For us, in international exchanges, it would be some time before they could establish a definite and unquestioned position, whereas the sovereign has already an immediate and universal currency. For the present, therefore, we hold that the gold coin to be minted in India ought to be the sovereign, which is the most powerful coin in the world and has been happily described by a distinguished Indian publicist as "the cement of the Empire."

25. Our proposal for a gold coinage has behind it the overwhelming support of Indian public opinion, the leaders of which are ready and anxious to extend the every day use of the common coin of the Empire, and are unable to understand why India should be denied the same minting facilities as have been given to Australia and Canada. The time also, as we have said, is opportune. We trust, therefore, that Your Lordship will accept our proposal in principle, and that on the submission of the necessary plans and estimates, you will be able to convince their Lordships of the Treasury, and the authorities of the Royal Mint of our readiness both to accept all necessary technical requirements and to grant all reasonable facilities for inspecting and testing the work of minting and refining. We need hardly say that we are determined to take all possible measures to ensure that the British sovereign coined in India should in no way be inferior to that coined elsewhere. We do not submit any proposals for coining half-sovereigns, experience having shown that this coin is not popular in India. Further, any present step to promote its circulation might conflict with the future possibility, should it be considered advisable, of introducing some other small coin, such as a ten-rupee piece, which would be more in accord with Indian sentiment.—We have, etc. (signed) Hardinge of Penhurst, O'M. Creagh, G. Fleetwood Wilson, R. W. Carlyle, Harcourt Butler, S. A. Imam, W. H. Clark and R. H. Craddock.

The Educational World.

Agricultural Education.

THERE is one great defect in the British administration of India and that is the way in which the agriculturists are being treated by the Government. For the taxes they pay to the Government they get very little benefit in return. As pointed out by the Hon'ble Mr. A. D. Jackson in the Madras Legislative Council some weeks ago "while during the last few days we have heard a very great deal about educational matters, and the advancement of education, we have heard less than I had hoped for on the subject of agricultural education, an education which I venture to submit is of a very productive nature. I cannot help feeling that agricultural education is being relegated to a comparatively neglected position. A distinguished visitor to Madras not very long ago told me that, in his opinion, the agricultural development of this Presidency was the most important administrative opportunity of the day. He added that if he had the honour to be a member of Your Excellency's Government, he would be inclined to push it for all its worth."

This indictment drew out a reply from the Hon'ble Mr. A. Butterworth who said that, he was not prepared to believe, as some of the Hon'ble Members did, that agricultural education had been relegated to a neglected condition. On the contrary, during the last few years, the question had been taken up, and seriously considered, and efforts would be made to make agricultural education accessible to a large number. Yes, "efforts would be made" yet. Let us wait and see.

Instruction in Co-operation and Agricultural Mutuality.

The *National Committee for Agricultural Mutuality* has taken an important step, initiating a series of lessons and lectures on co-operation, to be given in Rome, in September, 1913. The course will be inaugurated by Luigi Luzzatti and will be held in accordance with the following programme:

(*a*) Legislation in behalf of Agricultural and Mutual Societies;

(*b*) Agricultural Co-operative Purchase Societies, Agricultural Produce and the Purchase of the same;

(*c*) Rural Co-operative Credit Societies and the Organization of Agricultural Credit in Italy;

(*d*) Agricultural Co-operative Societies for Production and Sale of the Produce of the Soil;

(*e*) Agricultural Mutual Societies and the Organization of Agricultural Insurance Societies;

(*f*) Theory and Practice of Book-keeping for Co-operative Societies and for Agricultural Mutual Societies.

The lessons will alternate with lectures on the following subjects:

(*a*) Livestock Improvement Associations;

(*b*) The State Life Insurance Institute and the Development of Thrift in Italy;

(*c*) Agricultural Mutual Societies and the Fight against Epidemic Cattle Diseases;

(*d*) Co-operative Societies for the sale of Cattle.

The following will be admitted to the courses as students:

(*a*) Holders of Certificates or Diplomas from the Higher or Practical Schools of Agriculture, Veterinary, Surgery and Commerce;

(*b*) Officers appointed to hold Agricultural Lectures for the soldiers;

(*c*) Normal School Teachers, Schoolmasters and school mistresses;

(*d*) Members of the Agricultural Institutions.

Any one will be admitted to attend the courses on application.

At the end of the course the pupils will be subjected to examination and those who pass will receive a special diploma.

By this means it is hoped to form a constantly larger number of enthusiasts in favour of the extension of co-operation and mutuality in the country, as has already been done in Germany,

Austria, Belgium, etc., where the development attained by co-operation and mutuality is well known.

Training the Industrial Army.

Mr. James Graham, Secretary for Education in Leeds recently delivered a lecture at the University of Leeds, on "Full-Time Technical College Education and Training for Picked Young men." The lecturer dealt with the education and training of the men who in the future would be more or less leaders in industry, such as employers, works managers, heads of departments, and chief draughtsmen. The lecturer was of opinion that the period of technical training for the men who were to fill the highest positions in industry should last for six or eight years, and the training should be practical as well as theoretical. The complete training might consist of education in a good secondary school to the age of 17 or 18, followed by a couple of years in the workshop, and this, in turn, would be followed by a day course for three or four years at a technical school or at a university with technological departments. But the important point was that in all cases there should be opportunities for obtaining first-hand knowledge of the particular industry concerned. Under present conditions, only a small proportion of English boys could hope to obtain an education on the lines suggested An employer might select from his works a youth of exceptional intelligence and promise and send him to a first grade technical school, or possibly to a university, for complete day courses of instruction, while the youth on his side should agree to return to his employer for a certain time on the conclusion of his technical education. Such a plan was already in operation in a few firms. Scholarships were offered by the local education authorities of several large industrial centres to enable young workers of proved ability to attend day courses at a technical college or university. In Leeds, such scholarships were tenable at the university, and the lecturer pleaded for an increased number of scholarships of this type, He suggested that local education authorities might well grant them on the basis of one for every 50,000 of the population.

American Agricultural Colleges.

From a publication of the United States Department of Agriculture, it appears that since 1910 the number of institutions in the United States concerned with agricultural education has almost trebled. From 364 the number has increased to 2,546—an increase at the average rate of 76 per mensem. The collegiate courses have not appreciably increased, and there are at present sixty-one of these. The largest increase has been among institutions offering secondary or practical courses, among which are 40 privately endowed colleges. These do not compete with the State Colleges which number 2,154 compared with 360 in 1910. Normal schools and schools for Indians have been omitted from the list as their work is of an elementary nature.

Of purely technical agicultural schools of the secondary grade, there are 88 private, and 80 maintained wholly or partly by State funds at a cost of 780,000 dollars per annum for instruction and maintenance, excluding land, buildings and equipment. These institutions definitely prepare young men for farming and young women for home duties. Of elementary schools in which agriculture is taught, there are many hundreds Twelve States have passed laws requiring the teaching of agriculture in all common schools, five others require it in all the rural schools, and 3 in the rural high schools. The two chief difficulties as regards agricultural teaching are the training of teachers and their proper remuneration. Sixteen States have passed laws requiring that all teachers should qualify in agriculture. State normal schools do what they can to prepare them, but there is not sufficient provision to deal with the large number of teachers. Trained teachers for high schools are also scarce—the graduates from the College finding better opportunities in farming or at Agricultural Stations than as ordinary teachers. Conditions and prospects are better in the case of special Agricultural Schools, and courses subsidised by the State to attract trained men. Experience would

seem to indicate that teachers now in service have after a short course of agricultural training become very successful teachers of agriculture.

Training for Mill Hands.

At a Conference held at the Upper India Chamber of Commerce, Cawnpore, on the 18th March, between the Principal and officers of the Roorki College and the representatives of the Cotton Mill Industry of the United Provinces to consider the steps to be taken to introduce technical training, Mr. S. M. Johnson placed before the Conference a scheme which he considered the only one that could be adopted with any prospect of success. After considerable discussion, a resolution was proposed by Mr. Johnson, seconded by Mr. H. Bevis and carried, that training classes should be established by Government in Cawnpore and not at Roorki, and that the aim of these classes should be to train the *worker*—the rank and file of the cotton industry.

Mr. Johnson explained his views on the question as follows:—

From the point of view of a cotton spinner and manufacturer, I consider any scheme to train a class of students for employment in cotton mills in the United Provinces, whether in the spinning or weaving or dyeing branches, ought not to be attempted except on a limited scale which I will indicate further on.

The reasons which militate against the employment of the better classes of Indians as students have been stated over and over again, but there are two that I observe have not secured sufficient consideration. One is that these men are expected to take the places of our overlookers or mistris. Now the present mistri, besides having to supervise the mill-worker, is also a recruiting agent, and the trained student cannot become that.

The present mistri brings in recruits; they are his caste-fellows, and as a rule he works with and looks after them in the mill; and makes loans, advances of money to them if or when necessary. What is to happen if this agency is displaced?

The other point is that even supposing the trained student is all that can be desired, there can be only a very limited demand for them: we cannot fill our factories with trained students; what is to become of the surplus?

My idea is that training institutes should, in India, confine themselves to training the worker—the rank and file. A training institute in India must work on different lines to training institutes in western countries; there the people are more or less educated, and with their fixed hours of labour and relaxation, their habits and customs, those who feel disposed can, and do, avail themselves of the night classes which are associated with training institutes in order to provide the theoretical training in which they are deficient.

But in the East everything is different; to commence with, factory workers are to a large extent uneducated, and the long hours they have to be at the mill in order to perform the task which a European can do in a shorter time, taken together with their habits and customs, all those, I say, operate against their attending night classes. The question therefore is how can the worker, the ordinary rank and file of a factory, be improved?

Theoretical training, until, or unless the worker has some education is out of the question. Therefore the solution of the problem lies, it appears to me, in giving the worker a practical training to begin with, and *then* to select the best and give the latter a higher training at a later period, practical as well as theoretical.

It may be said that no better practical training could be given than in the factory itself, but I do not agree. The man or boy who goes fresh into a mill becomes one of a crowd. No one is interested in teaching him his work, or in showing him what he is to do or how he is to do it; and the result, in the great majority of individuals, is that from the time a worker comes in to a mill until he leaves it, he is a stupid, unskilled, untidy workman; caring nothing for his employer's interest and taking no interest in his work.

Most of us have seen a worker ruining the production of an intricate piece of machinery and his own toil not deliberately but from sheer stupidity. Most of us know that the Indian worker will never pick up, say, a cop that has been dropped or keep his machine or his pitch clean, however slight the effort required to do so; and we have also seen a good weaver allowing defects to occur under his very eyes, defects which he cannot avoid seeing but which he is too indolent to rectify. So that the factory is not a training ground for the Indian and training institutes ought to be established to train the *worker*.

The training institute should be, of course, in a centre where mill hands congregate and the Roorki one should be in Cawnpore, not in Roorki. The lines on which a training institute should proceed in these provinces should, I think, be as follow:—

Taking the cotton industry (and it is that alone I am dealing with) every mill should send a certain number of its workers to the institute

for a training course which for some time ahead should be limited to three months. The individuals thus sent should receive personal attention and practical training in their particular branch, whether it is the scutching room, the carding, spinning, weaving or sizing room. The hours of mill attendance must conform to hours in the particular district and so forth.

At the end of a three months' course these partially trained workers must go back to the parent mill and bind themselves for a period of one year. After serving for at least this further period in the parent mill, a limited number may be sent back for further training to fill the position of mistri or overlooker. This process must go on continually and there must be fresh batches every three months.

Side by side with the training of the worker, smaller classes may be formed for training educated Indians of the better classes, but it must be thoroughly realized that the institute is to train *workers*, the rank and file of the industry.

The important question is who is to pay the workers during training? Unquestionably the parent mill should do so; the individual undergoing a course of training must be looked upon during his training as belonging to the parent mill, and must go back to it and serve for a period of one year with it on completion of his course; and he must be paid by the parent mill just in the same way that he would be paid if actually working in it.

Speaking for the Muir Mills, I would be prepared to keep from ten to twenty men always at the training institute for a period of three months at a time, and pay them the wages they would have earned, had they remained inside my mill.

Small classes should be formed at the institute consisting of not more than 10 or 15 members each; one European and one native teacher should be allotted to each class so that every individual would receive personal attention.

It may be said that 400 or 500 partially trained workers a year would not make much impression on a community of say 12 or 15,000 souls. But it would be a commencement, and in time there would be a fair leaven of skilled workers instead of none at all.

That is, I humbly think, the key-note—train the worker—get the ground cleared and let your foundations be sound, you can embellish the superstructure in any way you please.

So far I have treated of technical training but I do not overlook that there must also be education. But the education must be only elementary education, and it should be only for the young.

For years past, the managements of cotton factories have been urged to assist in establishing schools for the education of their half-timers, but without result. I have always looked upon these requests as unreasonable. Why should private firms be called upon to perform a State duty?

But as a matter of fact most of us *have* endeavoured to help by having schools on the premises; the attempts however have invariably been failures, these children will not work half a day in a mill and go to school during the remaining half; and no scheme will succeed if the workers themselves are against it.

The State should, as I have said, educate the young; the period of education should be brief and when completed, the children should be free to take employment anywhere, even in factories. The children of the poor, in India *must* be wage-earners, parents cannot afford to maintain them in idleness.

Children who have undergone this elementary education, will, at whatever age they come into a mill, be better material than that we have at present, and when they get their turns of technical training they will also be better workers than their predecessors.

I would like to close these remarks by reading to you a curious confirmation of my views, which has just appeared in the *Indian Textile Journal*, a periodical published in Bombay. It says:—

"In Bombay we have the experience of twenty-five years to show how little influence the training of supervisors at the Technical Institute has upon the individual capacity of our workers and craftsmen. The Indian worker in every branch of industry, by means of his present knowledge makes a living. If he knew his work a little better, his gain in revenue would at once improve his condition. Greater accuracy and less waste effort are the two things he needs to correct his slipshod habits, and the kind of instruction he should be given is just what will produce these new habits. We all know that the average mill hand is careless, ignorant, suspicious, irregular and improvident. He has no pleasure or interest in his work."

What is needed is that we should impress on Government that in any scheme of technical education, there should be a clear distinction between the supervisor and the workman. It is to the improvement of the latter that all our energies should be directed.

INSURANCE.

Insurance as a Business.

The field of Life Assurance is large and is constantly expanding. Tens of thousands remain to be gathered into the life assurance fold, and those who are already policy-holders can beneficially for themselves add to their assurance protection. Life assurance is not the simple business it was in early times, when it consisted of a mere death provision and a kind of speculation on early decease. It is now an investment, with a certain profit whether the insured lives long or not. Under the form of endowment assurance, it is at once a family protection, and can be converted into an old-age pension. If there is unwillingness to submit to medical examination, that can be met, says the *Scottish Critic*, by a special agreement covering the first year or two. There are life assurances for partnerships, endowments for children, and almost any form of assurance can be arranged. The agent of to-day has opportunities which make the work widely interesting to himself and his clients, and open avenues to success which were not conceivable a few years ago. His sphere of labour brings him into contact with the most successful and the ablest men of the community.

Insurance in Japan.

It is said that insurance to provide for old age is not likely to have much success at present in Japan, because in that country it is considered a sacred duty for the relatives to contribute to the support of the aged or infirm members of a family.

The Best Age to Assure

While assurance is profitable to all classes at most periods of life, the greatest and most durable benefits are naturally secured by those prudent people who assure at an early age. For the premiums are much lower; the bonuses have longer to accumulate; the moral effect on a young man of having secured a sound policy for an amount corresponding to his probable position, may be considered as valuable as the material benefits he or his beneficiaries derive when the policy matures.

The Selection of the Best Office.

Obviousy, the first consideration is the solidity of the office. Cheap premiums, generous secret rebates, and other attractions are simply bonuses, so many dangerous lures unless this primordial essential of perfect security be fully assured The ability of the company to meet all obligations at any moment must be demonstrated. The best criterion of the success of an assurance company must, manifestly, be mainly based on the character of its dealings with its policy-holders. When a man insures, he likes to feel that he is not at the mercy of some unforeseen circumstance which may deprive him of the result of long years of economy and foresight. He wants to understand that his policy will be permanent and never liable to forfeiture except through some fault of his own.

Is Life Growing Longer?

In 1885 the average life was 34 years; in 1850 it was 32 years. According to Dr. Elie Metchnikoff of Paris it was only 30 years in 1790. This would seem to mean that in 122 years greater general knowledge of hygiene, combined with discoveries and improvements in medicine and surgery, has added 8·8 years to the span of life, which is 38·8 to-days. But, extraordinary as it may seem, according to a paper by Mr. Arthur Benington, the statistics of insurance companies do not fully bear out statement that human life is longer than it used to be. The actuaries and medical officers of some foreign life insurance companies are now busy working out a new mortality table. It is not yet finished but preliminary reports on parts of it have shown that while the mortality has been substantially lowered among insured lives before the age of 50, it has actually increased after 50 years.

MACHINERY, SCIENCE AND INVENTION.

A Substitute for Celluloid.

The British Fire Prevention Committee announce that they have undertaken a series of comparative tests with cinematograph films of celluloid and of a substance known as 'Cellit, and that the results of these tests may be summarized as follows :—

These tests demonstrated—

That, a cinematograph film made of 'Cellit' is practically a non-flammable film, and may be described as 'non-flaming.'

That, even if the conditions are such that a loose roll of 'Cellit' film should become ignited, the film either burns with difficulty or can be easily put out.

Having regard to the results of these tests, 'Cellit' has been classified by the committee as 'non-flaming.'

This is the only celluloid substitute that has so far been submitted to the British Fire Prevention Committee for official test and carries its certificate.

Paper Cups for jelly.

These new paper sanitary tumblers are made from spruce pulp. They are treated with aseptic qualities at the mill before being packed in cartons and shipped to the various stores and in these cartons, sold to the houses keeper, so the only thing she has to do is to break the seal and the jelly jars are ready for use. They are so inexpensive that they may be thrown away at the end of the winter season. Each tumbler is treated with a wax process which enables the jelly to slip out as easily as from a glass jar. Little round lids come for covering the vessels and slip into a small groove at the top. The hot liquor can be poured directly into these paper tumblers.

Money that really talks.

We gather from the *Scientific American* that a member of the Royal Society is able to imitate copper or steel-engraved banknotes so perfectly that the president of a large bank was unable to pick out the single genuine banknote out of a lot of ten which included nine of the kind reproduced by the author. This was intended to show the error of the prevailing opinion that banknotes cannot be imitated. At the same time that the somewhat disconcerting news comes out, a new remedy against counterfeit notes is proposed, this being the "speaking" banknote, and should a system of the kind be adopted, the note will not only concern the eye, but will assert its genuineness in a loud and intelligible voice, should it be placed in a phonograph. In fact, the note carries a given phrase which is inscribed on the edge just as on a phonograph cylinder, using a specially prepared paper for this purpose. Any kind of phrase can naturally be used, and its purport is of little importance, as it is designed simply to have a check upon the quality of the banknote by the use of the voice. All that is needed is to put the note into a properly designed phonograph, when it will speak for itself, according to the present idea, while a counterfeit remains silent.

The Value of Synthetic Products.

It is interesting to know, in view of the suggestion of synthetic rubber replacing natural rubber, that impurity appears to be an important factor in the quality of the latter. Rubber of great purity, for instance, will not vulcanize so well as one presenting a certain amount of impurity. Even Para rubber after purification is not so amenable to treatment as it was in its natural state. This has been shown by the experiments of Messrs. C. Beadle and H. P. Stevens, who, having abstracted the nitrogenous impurity from Para rubber found that the resultant rubber was very inferior to the original unpurified rubber. This, says the *West India Committee circular*, is in accord with the experience of other synthetic products. Artificial indigo has not the sound dyeing properties of the natural indigo. Beet sugar has not the health properties of cane sugar, nor refined cane so much nourishment as raw, and the good properties of the natural products are, no doubt, in many instances, due to their so-called impurities.

HEALTH AND HYGIENE.

Bronchitis in Children.

Oil of eucalyptus is distinctly helpful as an inhalation in the bronchitis of children. It may be made into a liniment with olive oil (1 in 8) and rubbed on the chest two or three times a day; or mixed with water (1 in 6) and the tent surrounding the cot moistened with the fluid. In either case the inhaled air carries with it some of the oil and lessens irritation and cough.

Treatment of Sore Throat.

One of the best remedies for sore throat is a compress worn over the throat at night. A piece of muslin or light cloth about half the size of an ordinary handkerchief should be folded so as to cover a space of about three or four inches, wrung lightly out of cold water, and placed around the neck. This should be covered by a piece of rubber cloth, oil-silk, or oiled muslin. A long, narrow strip of dry cloth should now be wrapped around the neck in such a way as to hold the compress firmly in place. If this compress is so put on as to retain its place, prevent evaporation, and exclude the air, it is an admirable remedy. It should be put on when retiring at night, and taken off in the morning on arising, the back being then washed in cold water, and rubbed until the skin glows.

Tight Neck-Wear and Headaches, etc.

Many cases of fainting, besides other serious troubles, are caused by tight neck-wear. Persons who suffer from more or less frequent headaches, disturbances of vision, attacks of dizziness, and nausea, will often find these ailments all due entirely to the construction of the neck by collars that are too small or bands that bind. The veins of the neck are near the surface, and it takes little force to compress them enough to interfere with the circulation of blood.

Some cases of persistent insomnia have been due to congestion of the brain from wearing sleeping apparel too tight at the neck, and have been promptly relieved by leaving the top button of the nightdress unfastened. Sometimes persons with all the symptomts commonly caused by eye-strain, who obtain no relief from wearing glasses, or have been told by the optician that they do not need glasses, get well with no treatment at all. They have not noticed that the welcome relief followed a change of dress in which the usual tight band that constricted the neck was replaced by one that was loose.

Cocoanut Milk in a Bellmetal Vessel.

"Evidently it is scientifically correct to regard cocoanut milk in bellmetal vessel a substitute for wine because almost as soon as the liquid is poured in it, fermentation commences, producing alcohol. Besides this, there is another reason why one should not drink it from bellmetal vessel. It has been found experimentally that the milk also possesses the property of dissolving some part of the bellmetal. And as copper and tin are the chief constituents of the alloy, whenever taken internally will produce a poisonining effect on the human system."

The Banana.

Atwater and Miller, in an article on Dietetics in the elventh edition of the Encyclopædia Britannica, give the following percentage composition of bananas:—refuse 35·0, water 48·9, protein 0·8, fat 0·4, carbo-hydrates 14·3, mineral matter 0·6. Now if the peel is removed from the fruit, representing the refuse 35 per cent., and allowance made for the water, it will be seen that the banana contains a notable quantity of all the necessary elements of food. The fruit may therefore be considered a highly nutritious food. It is also easily digestible—the time occupied in digestion is small compared with that of other foods, as the following times indicate; roast beef 3 hours 20 minutes, stale bread 3 hours 40 minutes, apples 2 hours 30 minutes, bananas 1 hour 45 minutes. The thick skin of the banana is a perfect protection against contamination of the fruit, it cannot be eaten like the skin of the apple or the plum, and when removed, the fruit may be eaten without fear of dirt or germs, even when it comes off the least inviting of costers' barrows—besides there is no core nor stone to slip down unawares.

HINTS AND RECIPES.

To Resharpen Old Files.

To resharpen old files, wash them in warm water to remove the grease and dirt, then rinse in warm water and dry by heat. Put 1½ pints of warm water in a wooden vessel, put in the files, add 3 oz. of blue vitriol, finely powered, and 3 oz. of borax. Mix well and turn the files so that every one may come in contact with the mixture. Add 10½ oz. sulphuric acid and ½ oz. of vinegar. Remove the files after a short time, dry, rub with olive oil, and wrap in porous paper. Coarse files should be kept in the mixture for a longer time than fine files.

Sharpening a Pencil.

In sharpening a lead pencil, in the first place, says an expert manual training man, the knife should not be over sharp, but should be a little dull, as, if too sharp, it will cut quickly through the wood and cut away the lead. If you remember, that is just the way a keen blade will use up a pencil. Then again, he says, it is best to hold the pencil in the left hand with the end to be sharpened pointing away from you and to cut away with a pushing cut, rather than toward you with a drawing cut, as when the point of the pencil is rested against the side of the thumb and is sharpened by a draw cut stroke of the knife blade.

To Distinguish Cast Iron, Steel and Bar Iron.

Here is a hint taken from a German source which will be of use to all who have occasion to buy iron or steel materials. On the surface, previously filed bright, or on the article itself if it is already bright, a drop of aqua fortis (weak nitric acid) is placed. After the acid has been allowed to work a few minutes, it is wiped off and the place rinsed with water. In the case of bar iron a dull-white ash-grey spot, with steel a brownish-black, with cast iron a deep black spot is distinctly visible, so that this simple operation suffices to readily distinguish the above mentioned different materials from one another. By this means, we can readily determine whether a wrought iron object is edged with steel and how far the welding extends. The entire test is based on the varied proportions of carbon in the iron products, cast iron containing proportionately the largest quantity of carbon, steel coming next and then wrought iron, in percentages about 3:0. 6:0·3. The effect of the nitric acid on the metal surface is to expose the carbon, the acid dissolving the iron. A similar phenomenon occurs when meteoric iron is exposed to the action of aqua-fortis, peculiar figures being formed.

Test for Diluted Milk.

The nitric acid test.—It is a very useful method to detect if the milk has been watered. This depends on the fact that normal milk does not contain nitrates, while ordinary fresh water always contains appreciable amounts of nitrates and nitrites. The method is as follows:— Add one cubic centimetre of sulphuric acid to a small quantity of diphenylamin placed at the bottom of a porcelain dish. Let a few drops of milk serum (obtained by treating the sample with acetic acid and warming) flow down the sides to the surface of the acid. The appearance of a blue colour, changing to reddish brown in 10 minutes indicates the presence of nitrates and that is a corroborative evidence that the milk has been watered.

Test for Starch in Milk.

Milk which has been watered or skimmed or both, is sometimes further adulterated by unscrupulous milk-dealers by adding starch to increase the opacity of the milk. Such fraudulence may be readily detected by adding a solution of iodine, when an immediate appearance of blue colour indicates the presence of starch.